FLIGHT

MAGAZINE

OCTOBER 1952
35 cents

TECHNOLOGY DEPT.

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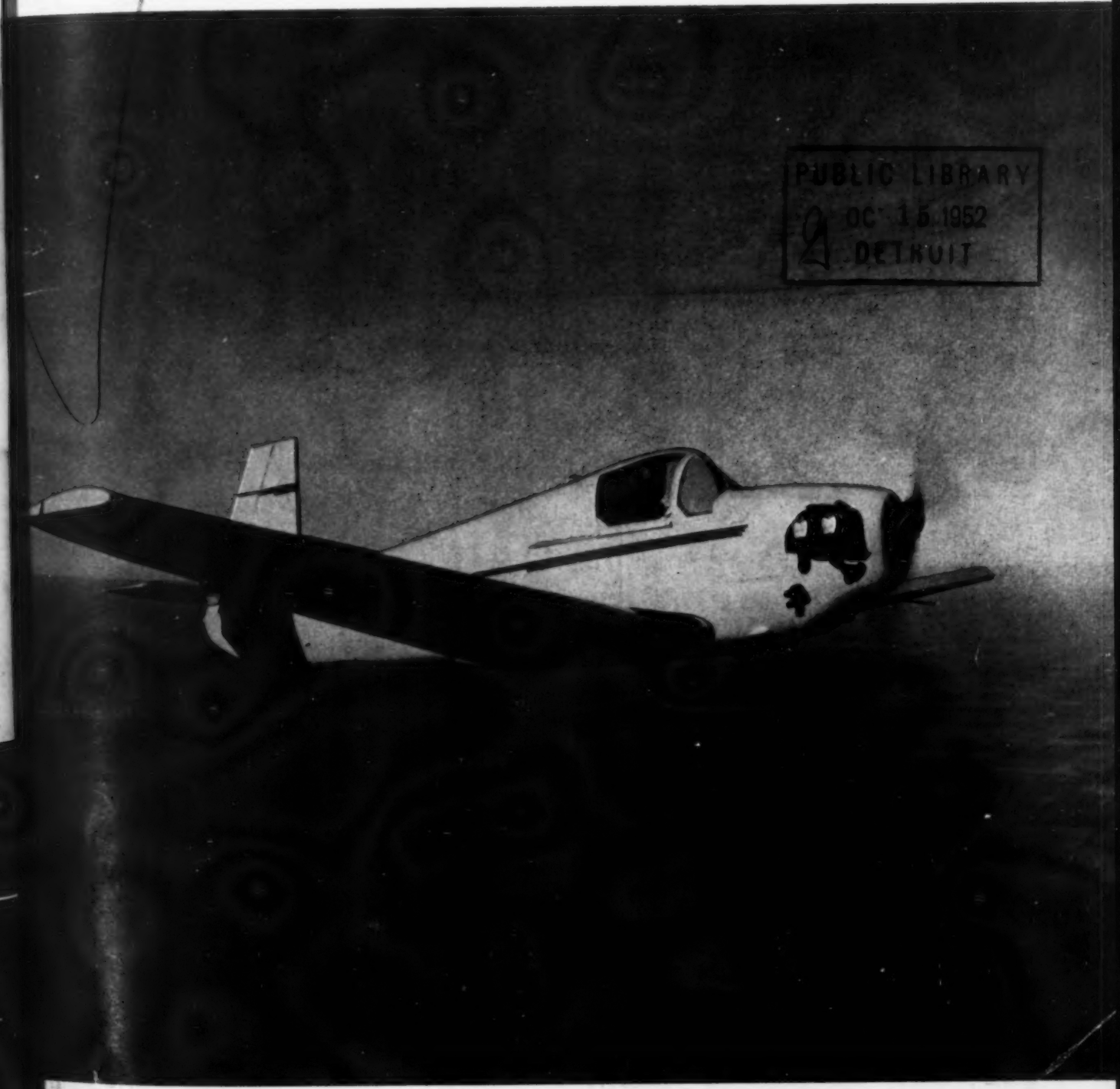

MOONEY M-18 MITE

500 shakes per second

The eyes of this Sperry engineer are on tomorrow—even while they closely observe the performance of a Gyropilot* flight control system being vibration tested at 500 cycles per second on a shake table. All Sperry equipments are being constantly "tortured" and exposed to conditions more rigorous than they may undergo even in tomorrow's aircraft.

In laboratory, test-cell – and its great Flight Research Center at MacArthur Field, Long Island—Sperry *develops* and *improves* its aeronautical equipment – and seeks true answers to the flight control problems of the future.

Today, because of this research background, modern Sperry flight controls are successfully flying jets, airliners, executive craft, helicopters, lighter-than-air ships and guided missiles.

For these widely diversified aircraft, the Sperry automatic pilot provides consistently smooth, precise automatic flight under all flight conditions.

Many other answers will come—as they have for 40 years—from Sperry's pioneering leadership, skill, experience and *tomorrow-mindedness* in developing automatic flight controls.

*T. M. REG. U. S. PAT. OFF.

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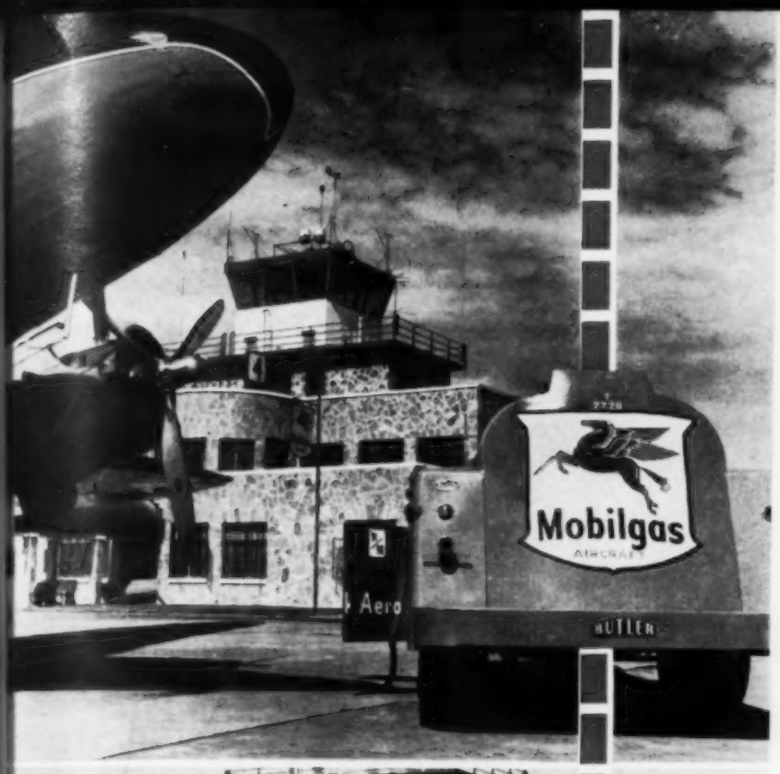


Large or Small, You'll Get Top Flight Service At Stinson Field

When San Antonio is a stop on your flight plan — land at Stinson Field. No matter what you're flying, you'll find a friendly welcome for you and service that's top for your aircraft. The field is lighted all night, the runways and taxi-strips are paved with the longest runway 4900 feet, and the tower operates from seven a.m. to eleven p.m., seven days a week. There's an administration building with plenty of lounging room, clean rest rooms and a cafe that's open every day in the week. It's only ten minutes drive from downtown San Antonio with transportation readily available. For your airplane — plenty of hangar and tie-down space, expert maintenance facilities, and Friendly Mobilgas Aircraft and Mobiloil Aero Service.

At far left is Adrian Williams, Airport Manager at Stinson, and Harold F. Priest, at immediate left, in charge of Mobilgas Service. From both you'll always get a friendly welcome and a helping hand. If you arrive late or want to get an early start — their telephone numbers are available and they'll be there to assist you.

Mobilgas AIRCRAFT

FORWARD WITH *Aviation*

Mobiloil AERO

MAGNOLIA PETROLEUM COMPANY

New Aero Commander

Joins list of planes 100% equipped with Goodyear tires, tubes, wheels, brakes

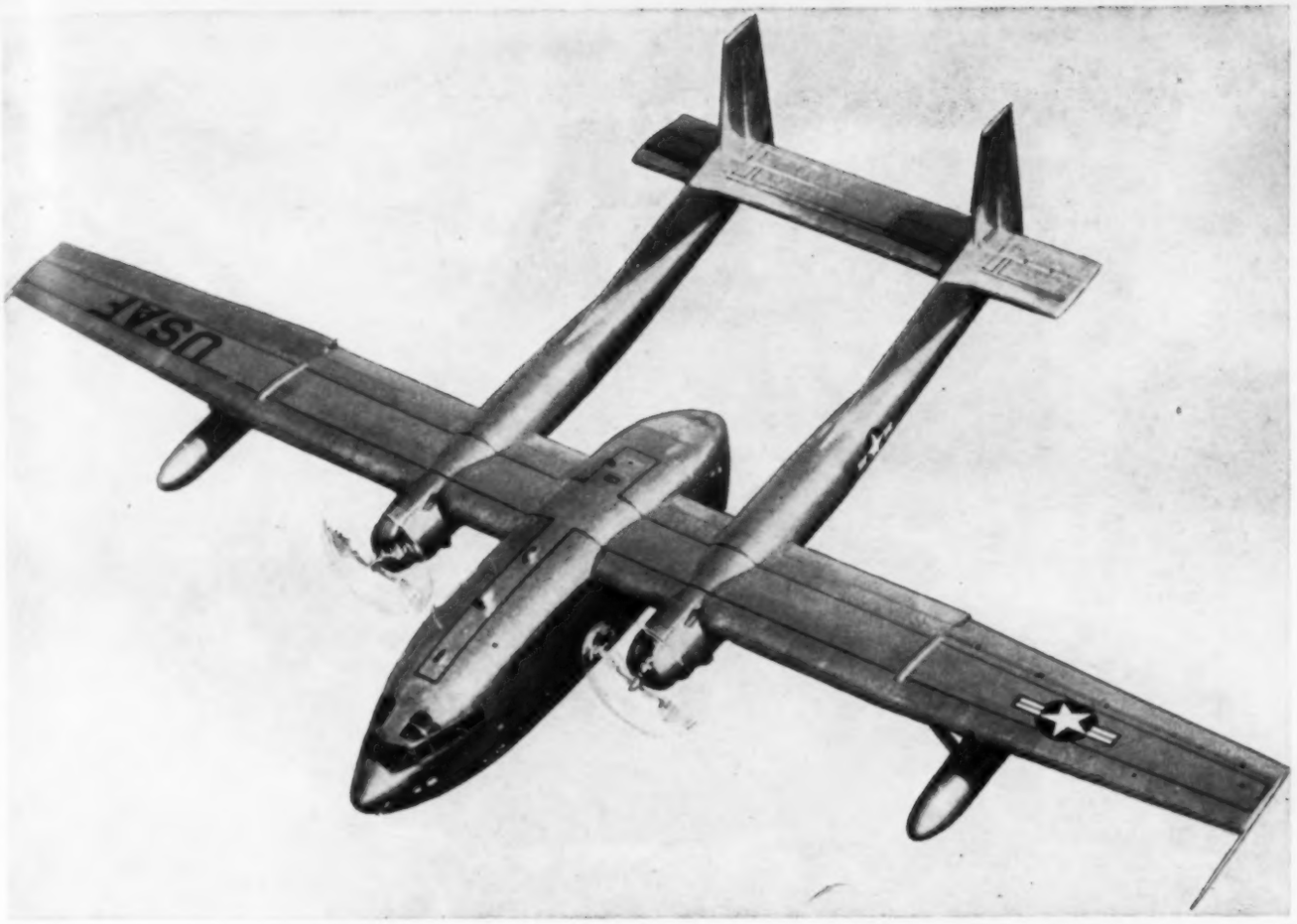
LATEST executive-type aircraft to go into production, the Commander is a new plane produced by a new manufacturer—Aero Design and Engineering Company. Like many other leading aircraft of all types, the Commander relies 100% on Goodyear for tires, tubes, wheels and brakes.

From the first design stages in 1944, Aero Design and Engineering has worked closely with engineers of Goodyear—veteran in the design and manufacture of aircraft and aircraft components. It is this long experience—plus the highest quality standards—that is responsible for the fact that more aircraft, the world over, land on Goodyear tires, tubes, wheels and brakes than on any other kind. For further details, write:

Goodyear, Aviation Products Division
Akron 16, Ohio
or Los Angeles 54, California

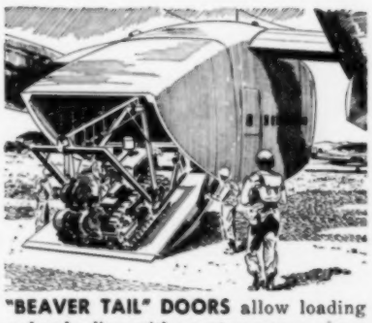
GOODYEAR
AVIATION
PRODUCTS

Aero Commander, new high-wing 5-6 place twin cruises at 197 mph—lands safely and surely on Goodyear equipment.

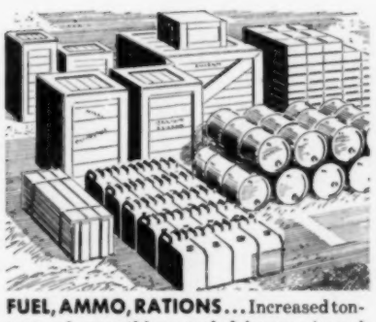


INCREASED AIR TONNAGE ...GREATER COMBAT RANGE

SLOWER DROP SPEEDS, made possible with the new C-119H, greatly facilitate parachuting troops, supplies and heavy equipment... more accurately and with greater efficiency than ever before.



"BEAVER TAIL" DOORS allow loading and unloading with greater ease... open for airborne drops... seal tight in flight when not in use... provide additional cargo space.



FUEL, AMMO, RATIONS... Increased tonnage of everything needed by our Armed Forces in combat... goes further and gets there faster with improved loading and air-drop facilities.

FEATURES of the new C-119H

Increased Wing Surfaces • Larger Flight Control Surfaces Improved Stability and Control • Increased Payload and Better Cargo Distribution • Greater Combat Range • Lower Stall and Jump Speeds • Shorter Take-Offs and Landings • Greater Tail Clearance • External Fuel System • More Efficient Heating System Rough Field Landing Gear • Crew Bail-Out Chute

ENGINE AND AIRPLANE CORPORATION
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First Scheduled Passenger Airline—1914

YESTERDAY . . . the plane used for regularly scheduled airline service was the Benoist Flying Boat, flown by Tony Janus (center, left) in 1914 from St. Petersburg, Florida to Tampa—twenty-two miles away. On New Year's Day of that year, six thousand excited spectators gathered to witness the inauguration of the St. Petersburg-Tampa Airboat Line in daily scheduled flights.

TODAY . . . plush ambassador service daily between New York and Los Angeles was recently introduced by TWA-Trans World Airlines, with the first three of their order of ten 64-passenger Super Constellation sky giants.

■ The great strides commercial aviation has made since the days of the country's first scheduled passenger airline is typical of the progress made in every phase of aeronautical development. The improvements in aviation fuels and lubricants run parallel.

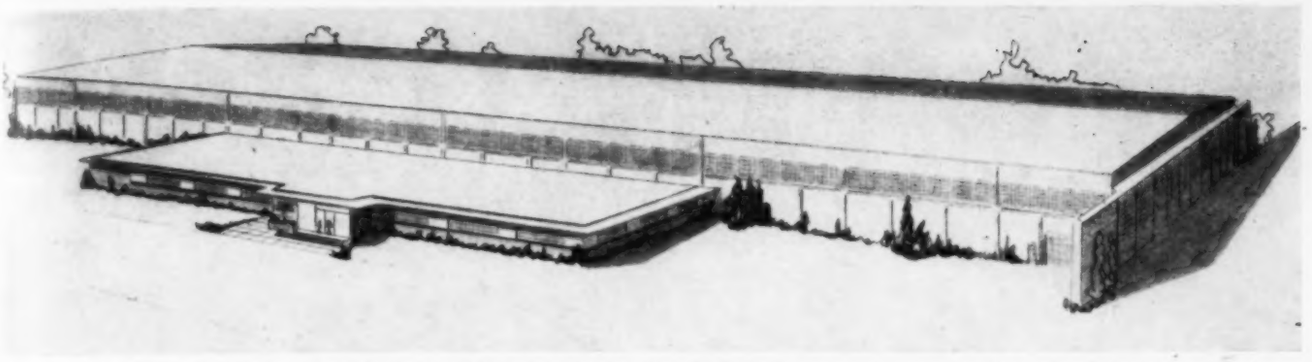
A pioneer in the field of special aviation gasolines and lubricants, Phillips Petroleum Company for years has been one of the country's largest suppliers of aviation fuels for commercial and military as well as private use.

For the finest in aviation products, rely on Phillips . . . first choice where performance counts!

Phillips 66

AVIATION PRODUCTS

AVIATION DIVISION
PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA



NEW $1,300,000 ADDITION TO BEECH AIRCRAFT FACTORY IN WICHITA is now under construction and will look like this drawing when completed. It is for production of T-36A trainer-transports for the U. S. Air Force.
—(Beech Drawing.)

AIR Report
Significant Trends and News

DON FLOWER HAS RESIGNED AS SALES MANAGER OF CESSNA AIRCRAFT COMPANY, intends to remain in aviation but will not announce future plans until after an "extended vacation." Dwane Wallace, Cessna president, revealed the resignation with reluctance, for Flower had wheel-horsed the Cessna distributor-dealer network to the top of the industry to cap his 12 years as Cessna sales manager—Cessna has sold more personal aircraft and at a larger dollar volume during 1952 than any other manufacturer. He was with Waco Aircraft before joining Cessna to become the lightplane industry's most successful sales manager. **FRANK MARTIN**, as assistant sales manager, will direct Cessna's field sales, with **JACK ZOOK** supervising administration activities of the sales division. **LEE RENSHAW** will direct the Western territory with **THAD ROBBINS** supervising sales in the Eastern half of the country. Under Zook's direction will be A. E. Kangas, manager of service and spare parts; Bob Chatley, sales promotion manager, and Gene Charlton, export sales manager.

LIGHTPLANE DELIVERIES BY SIX MANUFACTURERS totalled 2,068 with $17,198,000 total value for the first 10 months of 1952, according to the Utility Airplane Council of the Aircraft Industries Association. Cessna led in number of deliveries with 904 billed at $6,002,000, and Piper was second with 812 deliveries billed at $3,467,000. Beech delivered 289 airplanes, of which 251 were Bonanzas, having total billings of $6,777,000. Mooney delivered 31 valued at $64,000, Aero Design delivered 20 Aero Commanders billed at $846,000 and Taylorcraft delivered 10 valued at $35,000. Cessna 170B led the models, with 772 delivered. Piper Pacers numbered 472. Deliveries of all models for August totalled 322 as compared with 323 for July.

PRESENTATION OF THE DISTINGUISHED FLYING CROSS TO ROSCOE TURNER marked the first time in 20 years that this coveted award had gone to a civilian. It was awarded to Turner by unanimous action of both houses of Congress in recognition of his contributions to aircraft speed and safety.

NAVY USE OF RADIO-CONTROLLED GRUMMAN F6F HELLCATS AS GUIDED MISSILES in Korea recently was over-played by the newspapers in headlines and ar-

(Continued on page 28)

FLIGHT MAGAZINE
Including SOUTHERN FLIGHT and MODERN AIRPORTS

OCTOBER, 1952 VOL. 38, No. 4

COVER: A close-up flight portrait of the little Mooney M-18 single-seater, for which orders have recently piled up to put the Mooney factory in Wichita, Kansas, behind schedule. It is sold with either Continental or Lycoming 65-hp. engine, has cruising speed of more than 120 mph. A "beefed up" experimental version called the M-19 and demonstrated to the military is said to top 160 mph. with a 90-hp. Continental.
—(Mooney Aircraft Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas—Telephone STerling 2125. EASTERN ADVERTISING MANAGER: ELLIOTT J. FARRELL, Room 443 Chanin Building, 122 E. 42nd Street, New York City. Telephone Murray Hill 3-6379

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Allison jets power first mass refueling flight

Confidence in the dependability of Allison jet engines is again demonstrated by history's biggest transoceanic jet plane flight. Three squadrons of Republic F-84G Thunderjets completed the 10,895-mile movement, across vast expanses of the Pacific, from Turner Air Force Base, Georgia, to Tokyo. En route, pilots of the Thirty-First Fighter Escort Wing successfully completed air-to-air refuelings—first ever attempted on a mass flight.

This history-making flight, including 2,400 miles nonstop from California to Honolulu, demonstrates the mobility of American air power—and adds new laurels to the battle-proved record of the famed Allison J35 engine.

Another Allison First!

Designers and Builders of J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines

GM GENERAL MOTORS

Allison

DIVISION OF GENERAL MOTORS
INDIANAPOLIS, INDIANA

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. . . require an excessive amount of time to complete any job—the J. D. Reed Company is geared to efficient production work flow with delivery always on the date promised.

. . . delay any workorder for lack of parts and supplies—our inventory of parts and supplies is one of the most complete in the nation. You are always assured of authorized parts and accessories.

. . . oversell any service or product—we take pride in the fact when you taxi up to our ramp you are sold only what is required to keep your aircraft operating properly.

BOTH are important

WHAT REED DOES

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. . . offer one of the nation's most complete maintenance and overhaul shops. We are equipped to handle any job with tools that were designed for each specific purpose.

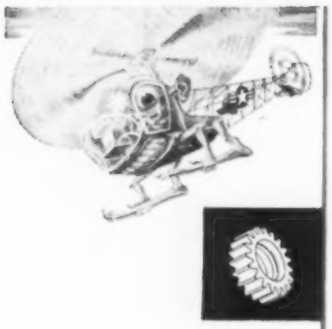
. . . provide the engineering skill and know-how that comes from long specialized service to the aviation industry. Our extensive experience qualifies us for any job.

. . . stand behind all work. We guarantee complete satisfaction when your work is done in the J. D. Reed Company shops.

Our company was founded on the principle of *never letting a customer down.* Such a principle is a part of American Democracy and *free enterprise.* We invite you to visit the **J. D. REED COMPANY** and let us show you why we can give you the service you are seeking through our sincerity in **providing the best** . . . *our way of doing business.*

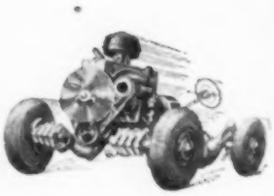
J. D. REED CO. Inc.
SALES SERVICE
Beechcraft
DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS

If you are in the market for a new Beechcraft or in need of service on your present one, you will find the **J. D. Reed Company** *a good place to do business.*



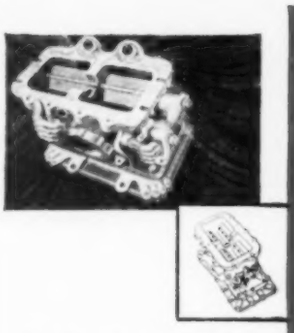
Ever see a helicopter grit its teeth?

When this helicopter's giant blade spins, tiny two-inch Lycoming gears—machined to tolerances of 1/10,000 of an inch—carry the load!



"Sinews" to give cars "go"

For any or *all* engine parts—pistons, transmissions, crankshafts and other essentials that can "take it"—leading auto manufacturers look to Lycoming.



Watch a plane's "lung" take a deep breath

To inhale 30,000 pounds of air an hour, an engine needs good lungs—the Lycoming fuel-injection body that never leaks or coughs at any speed or altitude.

LYCOMING PRESENTS

a representative group of its achievements considered of outstanding importance by America's military and industrial leaders

For a more complete story on Lycoming write—on company letterhead—for the booklet "Let's Look at Lycoming."

Here, through the eyes of a leading American illustrator, Lycoming demonstrates how it is geared to meet the most exacting requirements of America's leading industries. From basic research to precision and volume production, Lycoming offers a versatility of skills, extensive facilities and well-rounded experience. *Whatever* your problem—look to Lycoming!

AIR-COOLED ENGINES FOR AIRCRAFT AND INDUSTRIAL USES • PRECISION-AND-VOLUME-MACHINE PARTS • GRAY-IRON CASTINGS • STEEL-PLATE FABRICATION

LOOK TO **LYCOMING** FOR RESEARCH
FOR PRECISION PRODUCTION

LYCOMING-SPENCER DIVISION, WILLIAMSPORT, PA.
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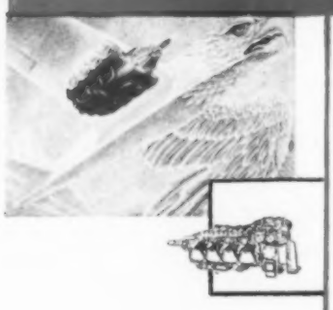
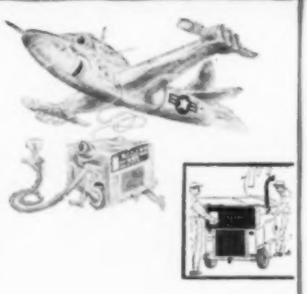
AVCO MANUFACTURING CORPORATION



There's a new "beat" in this eagle's heart

Ready *reserve power* is an outstanding advantage of this sturdy new Lycoming aircraft engine—the only 400-horsepower air-cooled model produced today.



Hot "juice" for cold jets

This light, compact, portable Lycoming generator provides dependable all-weather starting power for jets—from 135° above to 65° below F.!

Its "song" fills the air

For dependable air-cooled engines in a wide horsepower range, many of the nation's leading aircraft manufacturers look to Lycoming!

AMERICA'S LEADERS LOOK TO LYCOMING

AIR MATERIEL COMMAND
BEECH AIRCRAFT CORPORATION
BELL AIRCRAFT CORPORATION
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RYAN AERONAUTICAL COMPANY
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WESTINGHOUSE ELECTRIC CORPORATION
WRIGHT AERONAUTICAL DIVISION

ILLUSTRATIONS BY ARTZYBASHEFF

2 EASY LESSONS

for every pilot who doesn't want to learn about oils the hard way!

1. **For horizontally opposed, and Ranger in-line engines, use Gulfpride Aviation Oil, Series-D**

2. **For radial engines, or where a detergent oil is not desired, use Gulf Aircraft Engine Oil, Series-R**

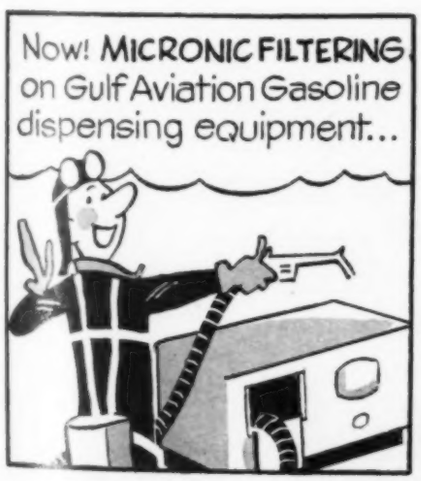
It's the world's finest detergent-dispersant aviation oil. Minimizes ring- and valve-sticking, oil consumption, oil screen-clogging and plug-fouling, because it keeps contaminents "in suspension"... keeps them from forming harmful deposits.

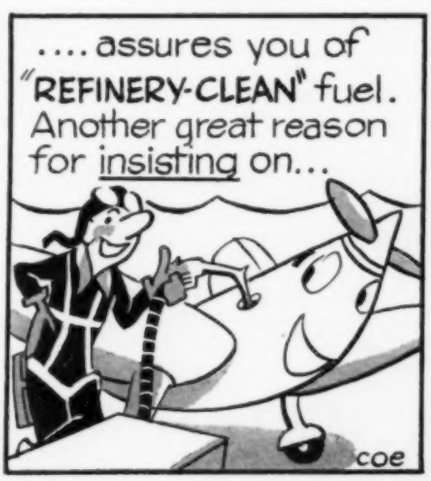
Gulf's exclusive Alchlor process—an *extra* refining step—makes this oil *extra*-pure, *extra*-efficient. Users of Gulfpride Aviation Oil, Series-D have actually increased periods between engine overhauls as much as 100%!

GULF
AVIATION PRODUCTS

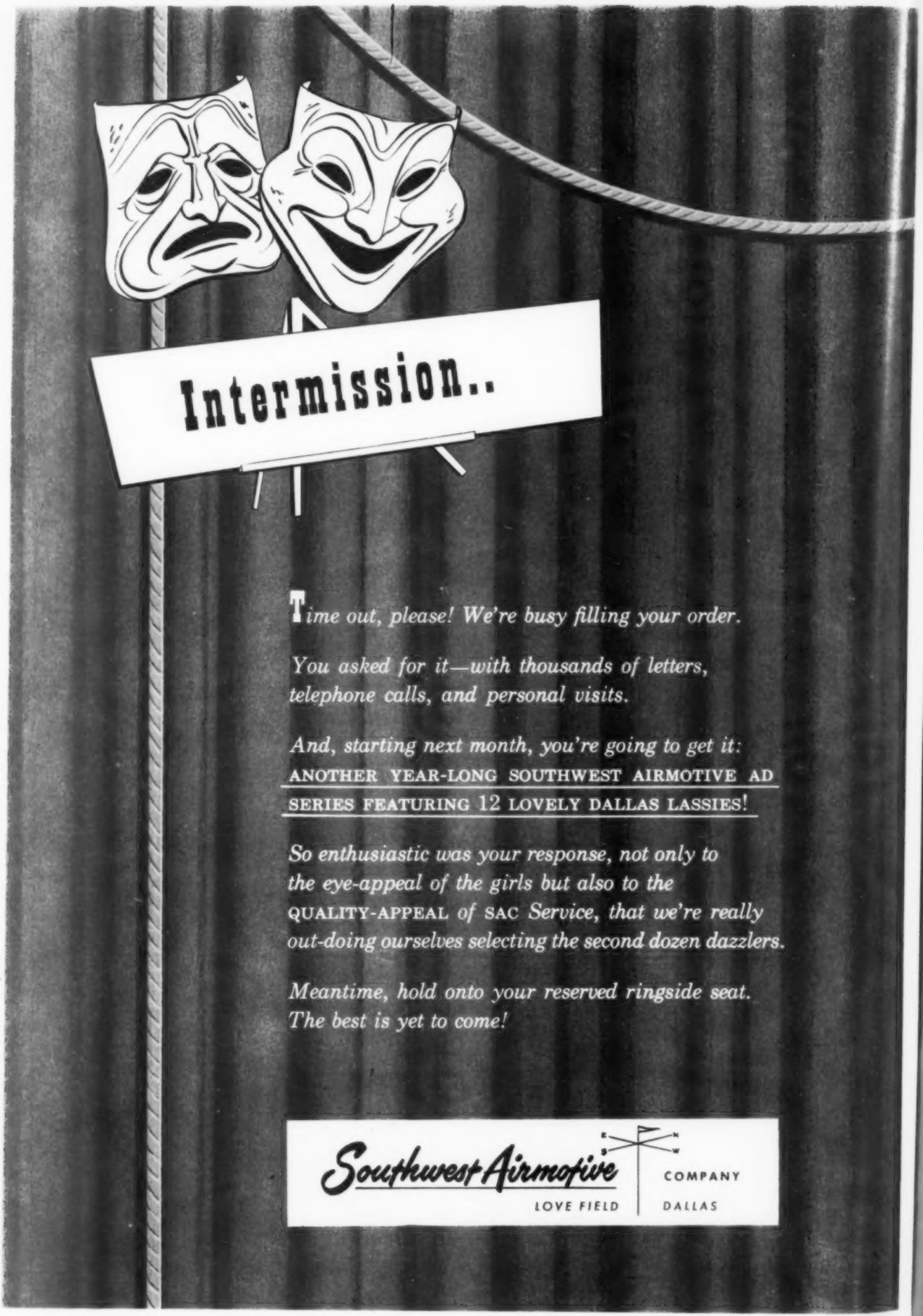
This top-quality, non-detergent, straight mineral lubricating oil is approved by Pratt & Whitney and meets the requirements of other aircraft engine manufacturers for all types of service in radial engines. It may also be used in horizontally opposed engines when operating conditions do not require a detergent oil.

Gulf Aircraft Engine Oil, Series-R retards sludge and carbon formation, and retains its body at high operating temperatures.





Gulf Oil Corporation • Gulf Refining Company


Intermission..
Time out, please! We're busy filling your order.
You asked for it—with thousands of letters, telephone calls, and personal visits.
And, starting next month, you're going to get it:
ANOTHER YEAR-LONG SOUTHWEST AIRMOTIVE AD SERIES FEATURING 12 LOVELY DALLAS LASSIES!
So enthusiastic was your response, not only to the eye-appeal of the girls but also to the QUALITY-APPEAL of SAC Service, that we're really out-doing ourselves selecting the second dozen dazzlers.
Meantime, hold onto your reserved ringside seat. The best is yet to come!
Southwest Airmotive COMPANY
LOVE FIELD DALLAS

Just among ourselves

EDITORIALS

A HEALTHY SIGN

A FLOOD of mail resulted from our recent announcement of Al Mooney's new high performance four-place design, which probably will be ready for production by early spring. Mooney's M-20 should fill a vacuum now existing in the present market insofar as price and performance are concerned. The remarkable response to the announcement can be interpreted as additional definite proof the lightplane market is very much alive and aircraft users and potential purchasers are anxious to buy improved models at the right price.

Mooney's Model M-18 single-seater, holder of the world's lightplane distance record for Category I aircraft, found its market this year and Al's factory is bursting at the seams trying to satisfy the takers with the backlog growing daily.

Just a few years ago people said there wasn't any market for a single-seater. What they meant was you can't sell 10-year-old, obsolete airplane designs. That's what happened to the two-place market when it folded completely in 1947-1948 and a lot of people figured that debacle was the end of the U. S. lightplane industry. Then along came Mr. Beech with his Bonanza, North American with the Navion, Cessna and Piper with their new lines of improved aircraft, which soon ended the recession. This year might well be one of the best years in lightplane marketing history, despite interference from war production headaches and high prices.

Improved engineering and design, perfected engines, better radio equipment and dependable accessories—all have contributed generously to the present high standards of aircraft utilization and the constantly improving sales reports. It is real and tangible progress and should not be lost sight of in these days when jets and guided missiles are crowding peacetime commercial aviation off the front page.

The emergence of the Mooney Aircraft Company from a five-year developmental period into a real and active factor in the lightplane market is a healthy, optimistic sign for a branch of the industry too often sold short or damned with faint praise in the money grabbing race to harvest the defense dollars, which almost resulted last year in the end of non-carrier civil aircraft production for lack of a firm materials program. That storm was weathered and the industry is now in a strong and secure position. Factories like Mooney's will play their part in the defense effort but as Al once told us, "I'll stick by civil aviation, remembering the times I saw jack rabbits running through the empty factories when the military contracts were cancelled."

It is a wise air policy that permits the flow of military and civilian aircraft out of the same factory doors and hastens the transportation revolution which is putting American business, agriculture and industry into the air. And it's a wise industry that doesn't depend 100 per cent on military business.

BIRD-DOG COMMITTEES

EARLIER this year the Curtiss-Wright Corporation released a significant document entitled "The Financing of Air Power." Mr. Roy Hurley, chairman and president of the company, shows in this study how the aviation manufacturing industry has not been permitted to operate on full equality with other industries and how amazing discrimination against our industry in such matters as fair rates of return and the financing of plant expansion programs stem from a fundamental conflict between the intent of Congress and actual results being achieved by the industry as revealed by its financial

(Continued on page 48)

What happened to —

Fowler of Flap Fame

You seldom see or hear from the man in this Air Force picture any more. But you'll use his name for years to come—he patented the flap which rolls out as well as down, actually increasing wing area for higher lift and efficiency and used on 30 different military aircraft types today. Harlan D. Fowler, veteran of 35 years in aviation, began his career as a Signal Corps aeronautical engineer in World War I. He conceived the flap in 1916. Lockheed first proved it successful in 1937. It became one of aviation's greatest boons of all time. Fowler is now at Wright-Patterson Air Force Base and heads the Air Intelligence Center's aero science group. He writes historical novels as a hobby. ★ ★ ★

"Flaps" Fowler

no barriers

to supplies, men and equipment during war or peace

There are no barriers to that remarkable combination — the plane and the parachute. In peace or in war, together they deliver men and materials, munitions and armaments, food and medical supplies, to any spot on the face of the earth . . . where and when it is needed.

Today the plane and the cargo chute have made the delivery of a jeep or a howitzer or cargo weighing many tons as dependably certain as the delivery of a small case of penicillin. No other means of transportation known to man can do this so swiftly and so surely . . . in many cases, no other means of transportation could do it at all.

Through research, experimentation and testing without limit, the Pioneer Parachute Company's tremendous parachute building facilities have worked side by side with the U. S. Armed services and the aviation industry to develop this unequalled transportation team. Pioneer is continuing to devote its skill and resources—mental and mechanical—to broaden the already vast usefulness of the modern parachute.

PARACHUTES MAKE THE DIFFERENCE!

PIONEER PARACHUTE COMPANY, INC.
MANCHESTER, CONNECTICUT, U. S. A.
CABLE ADDRESS: PIPAR, Manchester, Conn., U. S. A.

Southwest Factory Branch, Love Field, Dallas, Texas

SECOND WIND

FOR BUSY AIRCRAFT

Busy aircraft get a virtual "second wind" at TEMCO's overhaul division at Majors Field, Greenville, Texas. At a steadily increasing pace, TEMCO-Greenville is performing major overhaul and reconditioning work on both military and commercial aircrcaft.

Established in July, 1951, to integrate overhaul facilities and make room for increased manufacturing operations at the Dallas plant, TEMCO-Greenville, with assembly-line technique, is currently reconditioning C-54's for the Air Force and modifying an entire fleet of Martin airliners for Pioneer Airlines.

The expansion of this activity is characteristic of TEMCO's rapid over-all development into a major aircraft producer.

TEMCO

AIRCRAFT CORPORATION

DALLAS, TEXAS

The First Year

A report covering 1,700 hours of commercial Beechcraft Twin-Bonanza operations

By TOM ASHLEY

A FULL year has passed since the first two commercially-operated Beechcraft Model 50 Twin-Bonanzas began flying in September, 1951. Two of the original 11 pre-production Twin-Bonanzas, they were purchased by Carco Air Service of Albuquerque, New Mexico, and have been heavily utilized in the scheduled and non-scheduled atomic airlift operated out of Albuquerque and Los Alamos, the isolated center of atomic weapons development 65 miles away.

Here, in brief summary, is what Carco's 6-place Twin-Bonanzas, powered by 260-hp. Lycoming engines, have performed in actual work as small airliners during their first 12-month period:

Logged 1,719:35 hours flown, of which 1,258:20 were in scheduled service and 416:15 were in non-scheduled flying. One of them, H-4, had flown 945:30 hrs. as of August 31, 1952, and the other, H-5, had logged 774 hrs. as of the same date.

Transported 11,125 passengers a total of 902,080 passenger-miles.

Carried 271,156 lbs. of freight, express, mail and baggage a total of 12,649.2 ton-miles.

Completed 99.4 per cent of scheduled flights, having but one delay and six cancellations out of 2,693 scheduled flights.

These figures portray the new Twin-Bonanza as a hard-working airplane. They are broken down into monthly records in the accompanying table, which details the kind of utilization obtained by Clark Carr and his associates, Bill Hartshorn and George Shleppey of Carco Air Service.

Work accomplished becomes even more impressive when the figures are examined in the light of the circumstances affecting these operations. In the first place, they were not tried and proven airplanes when they were pressed into service—they were No. 4 and No. 5 of a brand-new design yet to be proven. As with any newly-developed aircraft, "bugs" were expected and did materialize to handicap operations, maintenance and costs. In the second place, Carco's operation for the Atomic Energy Commission is conducted under extraordinary conditions—high terrain, short hops, rigid defense zone requirements and widely-varying load demands which require fullest possible flexibility in scheduling.

Despite such conditions, Carco's Twin-Bonanzas have been efficiently utilized and at a profitable cost of 8.6 cents per passenger-and-cargo-equivalent mile. This not only includes considerable maintenance due to new-airplane "bugs" and other developmental costs, but a higher-than-usual depreciation intended to compensate for the premium purchase price of the Twin-Bonanzas. While this cost is impressive in airline-type flying, it does not accurately represent any sort of an index to Twin-Bonanza costs which would be experienced by a private owner such as a business firm using it for executive travel, or even for commercial operations other than Carco Air Service. Carco's special or "custom" air service for the Atomic Energy Commission involves extraordinary expense items, such as privately-operated two-way communications to meet security needs, for example. Moreover, Carco paid a premium, which was considerably in excess of the then-quoted purchase price, to obtain these two Twin-Bonanzas from the factory.

Performance-wise, Twin-Bonanzas

One of Carco Air Service's Twin-Bonanzas on the mountain-top air strip at Los Alamos, atomic development center. Lycoming engines have performed splendidly and propeller modifications by Beech have been proved by hundreds of hours of satisfactory service. —(FLIGHT MAGAZINE Photo by the author.)

Close-up flight shot of Twin-Bonanza at 9,000 ft. Carco's operations are above 5,000 ft. Year of flying has confirmed factory's performance figures, but supercharging for Lycoming 260's would give still better performance and higher single-engine safety factor at altitude.
—(FLIGHT MAGAZINE Photo by the author.)

H-4 and H-5 have proved highly satisfactory on Carco's short-haul operations, most of which are conducted between terminals only 65 miles apart, Albuquerque's Kirtland Field having a 5,300-ft. elevation and Los Alamos having an air strip at 7,100 ft. above sea level and with cruising altitude being 8,800 ft. between them. Less than usual power is available in this country and low power settings are also used because higher power would add little benefit in speed over such short distances.

Under these circumstances, a total of some 2,700 trips yielded an average ground-to-ground speed of 150 mph., or 25 minutes for the 65-mile flight including take-off climb, cruise, descent and landing. Fuel consumption has averaged out a shade above 24 gals. per hour.

Further to explain this performance, the average payload on a Carco Twin-Bonanza flight has been 3.5 passengers, 40 lbs. of baggage, 28.8 lbs. of freight and 18 lbs. of mail—a total payload of just under 700 lbs. in addition to the pilot. A typical scheduled flight from Albuquerque to Los Alamos is operated by the pilot about like this:

To minimize taxying, clearance from the terminal is obtained for the nearest available runway determined by prevailing wind conditions. This flight uses Runway 8, having a 15-mph. cross-tail-wind. The pilot has his check organized to the point where only about 60 seconds are required at the end of the runway. The pilot has 5 passengers, 75 lbs. of baggage, 25 lbs. of mail and 50 lbs. of freight aboard for the take-off. He breaks ground at 85 mph. At 90 mph., the pilot moves his gear switch to "up." As the wheels are tucked in, he reduces his propellers to 3,000 rpm. and turns off his boost pumps, one at a time. At this point he is about ready to begin a 90-degree left turn to take up course for Los Alamos.

He continues his climb at full throttle and 3,000 rpm., until he has attained about 6,400 ft. MSL., which gives him about 1,000 ft. of terrain clearance. Here he levels off on course and pulls back his boost to 20 inches and his props to 2,600 rpm. By now he is three miles out, so he switches radio frequencies and makes a required position report to Carco Radio, holding course and altitude for the next 6 miles as customary under agreement with the military to avoid possibility of interference with local jet traffic from a fighter group based at Albuquerque.

Now the pilot can resume his climb. If it is a hot day and he is heavily loaded, he re-establishes climb power of full throttle and 3,000 rpm. and holds a 110-120-mph. climb to 8,800 ft., which he attains about half way to his destination. If he is lightly loaded, or if the air is cool and climb is easy, he may make a sort of cruising climb to 8,800 ft., rather than re-establish climb power.

Shortly after leveling off at 8,800 ft., he makes another required position report to his company radio and a little farther along he switches over to report his position to Los Alamos Radio —just before beginning his descent some 7 miles out from destination. Power is soon reduced to 15 or 16 inches until the turn onto final approach. He lands uphill and into a cross-head-wind of about 25 mph., this air made turbulent by the mountain peaks and rough terrain near the Los Alamos strip.

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First Year of Twin-Bonanza Operations By Carco Air Service (September, 1951-August, 1952)

Month	Flights Scheduled	Flights Cancelled	Hours Flown	Miles Flown	Number Passengers	Passenger Miles	Lbs. Freight and Baggage	Lbs. Mail
Sept., 1951	214	..	103:55	16,155	721	56,725	15,452	4,728
Oct., 1951	186	..	168:30	27,010	753	72,425	18,728	5,265
Nov., 1951	224	..	203:50	33,010	899	97,365	16,600	4,009
Dec., 1951	198	..	114:10	17,940	616	47,325	13,138	4,404
Jan., 1952	256	..	111:50	17,420	987	64,155	20,328	4,384
Feb., 1952	280	..	134:30	28,855	1,000	68,265	18,612	4,483
Mar., 1952	232	3	130:55	20,310	861	69,050	18,132	4,563
April, 1952	310	1	168:45	26,395	1,108	84,005	20,917	5,321
May, 1952	238	2	118:30	17,415	927	65,525	19,615	3,552
June, 1952	269	..	154:00	21,240	983	73,060	18,147	4,249
July, 1952	286	..	155:20	24,450	1,134	102,090	18,880	4,398
Aug., 1952	279	..	155:20	24,450	1,136	102,090	19,880	4,250
Totals*	2,972	6	1,719:35	266,650	11,125	902,080	217,402	53,606

***Completion record based on scheduled flights. Remainder of statistical data includes non-scheduled as well as scheduled operations.**

This is the loading area, where 30,000 gals. of fuel and 200,000 gals. of DDT were stockpiled after being freighted in during the winter and stored for the aerial assault against budworms. De Havilland Beaver with spray booms is in foreground.
—(de Havilland Photo.)

Operation Budworm

How victory was won by ambitious aerial applicators against heavy odds in an isolated wilderness.

By SANDY A. F. McDONALD
Sales Manager, de Havilland Aircraft of Canada

THE budworm is neither a Republican nor Democrat. He is an undesirable 'so-and-so'. American born, he has little regard for the American way of life. He knows not the meaning of the live-and-let-live principle, or knowing it, couldn't care less. The budworm lives only to destroy. His destruction is widespread. In one season, in one state alone, it amounted to 30 million cords of pulpwood. Unchecked, the budworm could lay waste an area that all Russia's air squadrons would find quite an undertaking to devastate with equal effectiveness.

The budworm's diet is spruce and balsam. His appetite is a ravenous one. From 1910 to 1919, he ate the woodlands industry in Maine out of house and home—not to mention the unpaid installments on its 1910 gramophones, doo-dads, and etceteras. None of the vast heritage of wealth that is stockpiled in our sprawling forest areas is immune from the danger of this gluttonous pest. The budworm can do more damage to the forest areas in a year than all the forest fires do in an entire generation.

Since 1949, the forests of New Brunswick have been threatened by the budworm. Some 2,200 square miles have been affected. One of the most vulnerable regions has been an area of some 225 square miles lying within the International Paper Company's limits. This tasty morsel which the budworms have been fixing to devour is worth 8 million dollars to the International Paper Company in stumpage fees alone. Its estimated 2,000,000 cords of wood are sufficient to supply the mill at Dalhousie for 7 years—representing an income to the people of New Brunswick of over 100 million dollars.

The International Paper Company

just couldn't afford to play host to the hungry hordes of budworms and stay in business. That is how "Operation Budworm" came into existence. Operation Budworm is the most ambitious airborne insect control project which has been attempted anywhere to date. Some 19 Stearmans and 2 de Havilland Beavers were flown to New Brunswick to take part in the operation.

At Ramsey Brook, the headwaters of the Upsalquitch River in Restigouche, a landing strip was bulldozed out of the virgin wilderness. New Brunswick is a land of rugged, rolling hills with dense forest cover. The building of the landing strip in the time allotted was something of an epic undertaking in itself. Two runways, 3,000 feet in length, were constructed in the form of a "V", converging at the loading bay. One runway was used for take-off and the other one for landing.

The loading area contained six loading bays. Each loading bay had an insecticide pump on the left and a fuel pump on the right side of the aircraft when it was taxied into the bay. The bays were spaced approximately 15 feet apart. The airfield cost in the neighborhood of $150,000 to construct.

Ramsey Brook is not bothered with overcrowded street-cars, parking meters, or any of the more common problems associated with urban existence. The site of Operation Budworm is 70 miles from the nearest soda fountain, located in the heart of downtown Bathurst, New Brunswick. A townsite had to be cleared deep in the heart of the forest to accommodate a population of 150 inhabitants—biologists, forest rangers, cooks, etc., in addition to a small army of workers. Cookhouse, mess-hall and bunk-houses were freighted in, erected and "Budworm City" was born. Later, when the flying types with their pin-up girls moved in to take up residence, the name was changed to "Bugville".

Thirty-thousand gallons of fuel and 200,000 gallons of DDT were hauled to the strip by 'cats' over a bush trail in Winter while the ground was frozen. Most of the Stearmans were ferried in from Oregon and Washington, some 3,200 air miles, by Central Aircraft of Yakima, Washington. Two Stearmans were flown from British Columbia by Skyway Aviation Services, and one by Leavens Brothers Air Services from Toronto. One of the two Beavers was operated by Aviation Services of Moose Jaw, Saskatchewan, and the other by Wheeler Airlines of Ste. Jovite, Quebec. The main operation of 192,000 acres was subdivided into sections of 7,000 to 9,000 acres per Stearman, and 13,000 acres per Beaver.

Reconnaissance of the forest blocks assigned to them was the first job of the pilots. The entire area had been previously photographed from the air and the blocks laid out in conformity with topographical features such as creeks and mountains. Meanwhile, teams were taking samples from the diseased trees for study by entomologists to check the budworm's development. Trails were hacked out through the bush by spray assessment crews, who camped out under the stars to check the specially treated squares of paper distributed throughout the area for the purpose of registering spray density. Some great mind came up with the bright idea of substituting paper pie-plates treated with the soluble die. The plates, distributed at the cost of some time and effort, were promptly eaten with great relish by the fur bearing inhabitants of the region, and the general idea, reduced to the rank of corporal, was quietly laid to rest in an unmarked grave.

Flying commenced on June 10. With more than a normal share of adverse weather, the operation was completed in 20 days. One Stearman was washed out. The engine caught fire in the air and the pilot crash-landed on the shore of a lake two miles southwest of the airstrip. Thanks to the efficient type of harness worn, the pilot escaped practically uninjured.

The flights were made at a height of 100 feet above the treetops over difficult rolling terrain. Owing to the dense timber growth of the area, conventional methods of marking swath lines for spraying, such as balloons, smoke-markers, flag men, etc., were not practical. Pilots had to maintain flight lines by flying compass headings

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Here's Budworm City's "DDT Boulevard" at 4 a. m., far from civilization in the New Brunswick wilds. Crews shown here are headed for the air strip to begin the day's work.
—(de Havilland Photo.)

Budworm airmen had to construct their own air strips, bulldozing them out of dense timber as shown here.
—(de Havilland Photo.)

Close-up of Horten IV cockpit shows Pilot Rudy Opitz at the controls in a kneeling, "praying mantis" position. He says visibility is excellent, prone position comfortable. This was world's first prone position cockpit since days of the Wright Brothers.
—(FLIGHT MAGAZINE Photo by E. H. Pickering.)

Soaring Surprise

By E. J. REEVES
President, Texas Soaring Association

THE 19th National Soaring Contest of the Soaring Society of America late in August produced more records than any National —10 records were broken in 10 contest days; 13 flights exceeded 300 miles in length; 25 pilots competed and flew 26,066 miles.

But other interesting aspects also made the 19th National, held at Grand Prairie, Texas, outstanding among all others. For example, it was the most hotly contested meet ever. Only 165 points separated the top three pilots at the finish. R. H. (Dick) Johnson of Palo Alto, California, won the championship with 2,045 points in his RJ-5 but was never far enough in front to cinch his title until the last event was over. Second was William S. Ivans, Jr., of San Diego, California, with 1,927 points, and W. H. Coverdale, Jr., of Chattanooga, Tennessee, was third with 1,880 points. Both Ivans and Coverdale flew Schweizer 1-23's. Nobody ran away from the pack in the contest. It was nip and tuck all the way and piloting technique was at the highest it has ever been.

We made history, too, in another important aspect. Ages of contestants ranged from 14 to 65—two youngsters of 14 and 15 competed along with several grandfathers. This, in a national meet, points up the fact that soaring offers great opportunities for developing more airmindedness among our people than we have ever achieved.

Small frontal area obtained with prone cockpit are emphasized in this portrait of Opitz. He has a chin rest but needs to grow a beard, as stubble becomes irritable in flights of 6 hrs. or more duration.

U. S. Champion Dick Johnson in his RJ-5 is shown at left, with his recent bride. Second place winner was Bill Ivans, shown above in his Schweizer 1-23. That's the author in the straw hat.
—(FLIGHT MAGAZINE Photos by E. H. Pickering.)

We have preached this for years. The 19th National demonstrated it.

But the greatest surprise of all was the competition furnished by a tailless sailplane, the first flying wing ever to compete with conventional aircraft in a national contest. This was a Horten IV, built a decade ago in Germany and a true tailless in every sense of the word.

Drag despisers in soaring groups have long been intrigued by the Horten design, which was originated in 1931 by a couple of teen-age German brothers who managed to build a long series of flying wings even through the war, piston engines and jets being tried in several of them. However, all remained as prototypes. Today, Horten designing and experimentation is being continued in Argentina.

At the 19th National in Texas, the Horten IV proved a surprise by demonstrating impressive stability and superb handling characteristics. A master of flying-wing piloting was at the controls—Rudy Opitz, a German with many years of flying-wing test piloting, and now residing at Dayton, Ohio, where he is working with the U. S. Air Force. The Horten finished 7th in the 19th National but was still close to the top with 1,530 points. The straightforward manner with which Opitz competed convinced everybody of the tailless design's practical values and it appeared to us that this will hasten acceptance of flying wings and thereby accelerate their further development in this country.

At the end of the 19th National, arrangements were completed for the acquisition of the Horten IV by Mississippi State College's outstanding aerophysics department headed by Dr. August Raspet, the eminent aerodynamist. He is now arranging to obtain the services of Opitz as test pilot.

Says Dr. Raspet: "We have long studied German data on this design and are convinced that it offers tremendous possibilities. For example, we believe its present 32 to 1 glide ratio can be increased to as much as 65 to 1."

Opitz and his radical sailplane also proved a big surprise in a couple of humorous incidents. A military T-6 buzzed him repeatedly on one of the cross-country flights, its pilot undoubtedly having visions of flying saucers. Another time, he ran out of thermals and had to land at a U. S. Air Force base. The tower alerted everybody and his accent didn't help any after landing and being surrounded. Finally he showed credentials identifying himself with USAF work in Dayton and all was well.

There are many virtues in the design. But the big point is that the Horten has competed impressively against the best conventional designs—not as an exhibition or as a prototype show-piece, but as a work-a-day aircraft ready to stand or fall on its own revolutionary features. ★ ★ ★

Prone cockpit has elaborately cushioned interior for pilot's kneeling position, with rudder pedals at rear. Large photo shows spoilers in open position. One near wingtip is rudder, those near cockpit are air brakes. Nosewheel is dropped on take-off and skid is retractable. Horten IV has small frontal area with extremely low drag coefficient of only 0.01, a world's record for sailplane aerodynamics. Figures include 65.6-ft. span, 19.3-degree sweepback, 20.9 aspect ratio, 3.5-lbs/sq. ft. wing loading, 1.8-ft./sec. minimum sink, 45-mph. air speed at best glide angle, 35-mph. air speed at best sink, 124-mph. maximum design speed, and 506-lb. empty weight. In competition, Opitz appeared to have excellent control and stability at all times, including take-off and landing.

—(FLIGHT MAGAZINE Photos by E. H. Pickering.)

Operator-Manager Agreements For the Small Airport

How confusion can be avoided in getting a difficult job performed with better results

By HAROLD WEATHERLY

THE present serious problem confronting many cities and airport owners who have a small airport is in securing a competent and dependable operator-manager for the airport. Even more airport owners are going to face this problem as the contracts with operator-managers expire. On examining these contracts it is evident that they were drawn up under conditions much different from those which now exist in the aviation industry. These contracts have not given incentive to encourage activity and improve the airport, its facilities or its appearance. It seems high time that a new plan for business agreements be worked out.

Some of the problems are evident. For example, recent dollar-a-year contracts between cities or airport owners and operator-managers have not been too encouraging because it is almost impossible to fix the responsibility for the performance of certain duties at times. For that reason there is a desire for something other than an operator-manager contract as such, but there is still a necessity for writing out the obligation for the performance of certain services and duties.

Since an operator of a flying service is engaged in private business and as such is a tenant on the airport property, he inherits a position opposite the airport owner, the same as any tenant and landlord. If he acts as manager of the airport for the owner, he then is an agent of the owner and thus occupies a position opposite any tenant. Because of these unavoidable positions the wording of operator-manager contracts is often difficult to understand because the position of the individual shifts from one of a tenant to one of an agent for the owner in the same document.

Balancing Privileges and Services

Such an arrangement causes confusion to anyone trying to fix responsibility for performance and is the basic reason for suggesting that even in smaller communities it would be well to explore the possibility of drawing up separate agreements for an operator and manager. Should there be a desire for the contracts to balance financially, then the same value can be placed on each contract. However, it should be provided that cancellation of one contract gives the other party option to cancel the other.

Should there be a question as to the value of the services performed under the manager's contract as well as privileges granted under the operator's contract, then it is recommended that a trial period be set up wherein these values can be measured. This can be done by first establishing a value for the privileges granted to the operator in the operation contract. Then the manager's contract can be so prepared that the performance rendered by the manager will approach the same value as the operation contract. The manager's contract can call for the manager to furnish reports to the owner (probably monthly) displaying such items as flight activity, sales of aviation products and miscellaneous items, record of buildings occupied and delinquent collections, maintenance performed and the time spent in such work, cost of minor supplies, etc.

This monthly report can well display the time spent as manager in the performance of these duties and as a time record constitutes a basis for establishing the amount to be paid by the owner under the management contract. If the airport is a small turf field and the activity would vary considerably with the season of the year, it can be assumed that the operator would probably be paying the owner during the summer when flight activity was high and maintenance requirements relatively small. During the winter it would afford the operator the opportunity of spending time in the performance of such duties as painting the interior of the buildings, repairing lighting and marking equipment, etc. During these months the owner quite probably will be paying something to the operator. If there is a fear of abuse under these conditions, then the owner should set limitations on the amounts that they will pay during any one month for the performance of the manager's duties.

How It Works

Typical of the privileges and obligations in the operator's contract are the following:

1. The right to conduct commercial flight operations from the airport.
2. The right to sell aviation fuel.
3. The right to sell airplanes and parts.
4. The right to occupy certain buildings.
5. The right to occupy certain areas for parking of aircraft, etc.
6. The right to engage in flight enterprises such as crop spraying, student instruction, etc.

For these privileges granted non-exclusively the owner should fix a value

which then becomes the amount that the operator pays to the city.

Typical of the duties and responsibilities that the airport owner, whether it be city or individual, should expect to pay for in the manager's contract are the following:

1. Maintenance of adequate records to show the amount and type of aeronautical activity. (This includes maintenance of an aircraft register for transient aircraft as well as local air traffic.
2. Performance of such duties of minor maintenance as may be desired.
3. Performance of such items as mowing, and other such things of major maintenance as may be desired.
4. Collection and accounting of all monies which are due the owner.
5. Assumption of responsibility for conduct of flight operations. (By this is meant being at the airport when night operations are being conducted or during times of heavy air traffic.)
6. Acting as agent for the owner in matters of negotiation if desired.

It is evident that the successful use of these contracts is dependent upon the desire of the owner for such an arrangement to the extent that they are willing to pay for the services performed under the manager's contract and also the success is dependent upon the desire of the operator-manager to earn for himself by performance and adequate records if he desires to balance the amount of his operation contract with the manager's contract.

In looking at the balance sheets and city records of numerous small airports, we find that the actual monetary value of such contracts varies from $50 a month to about $250. This arrangement might be termed an *incentive* management plan because the reimbursement is in proportion to the performance. It provides the advantage of having the individual who desires that minor maintenance be performed in a position to do this work himself and be properly reimbursed. It has the advantage of providing the individual owner or the city with accurate information as to the activity as related to cost, which is something many cities need greatly.

It is essential in this type of arrangement that there be established an elementary system of running records. Even the smallest airport under this scheme can support an airport register and a monthly report. From these two forms any system of running records can grow as desired. In the absence of any type of permanent records in the past it is felt that this can be a start for most of our smaller airports. The forms which are shown above represent some that are now being used successfully in a small town in Kansas.

AIRPORT RUNNING RECORDS (Form 1) For Month of _____ 19__

_____ MUNICIPAL AIRPORT

Monthly Report to the City of _____, _____

	1	2 THIS MONTH	3 LAST MONTH	4 THIS YR. TO DATE	5 LAST YR. TO DATE	6 SAME MO. LAST YEAR	7 INCREASE OR DECREASE LAST MONTH	7 INCREASE OR DECREASE LAST YEAR	8 % GAIN OR LOSS LST. MO.	8 % GAIN OR LOSS LST. YR.
I	ACTIVITY (Flt. Operations)									
	Transient Aircraft									
	Local Aircraft									
II	SALES									
	Gasoline, gallons									
	Oil, Quarts									
III	HANGARS OCCUPIED			(Does Not Apply)						
	T Hangars									
	Shop Hangars									
	Storage Hangars									
	(Available)									
IV	RENTAL RECORD	Paid	Del.	Paid	Del.	(Does Not Apply)				
	Adm. Bldg.									
	Hangars									
	Land Lots									
	Other									
V	MAINTENANCE									
VI	SUPPLIES (Cost)									

REMARKS:

SUBMITTED BY: _____
TITLE: _____
DATE: _____

There isn't much record-keeping on most small airports, but these simple forms have been found to be valuable on a field in Kansas. They provide a handy index to airport activities.

AIRPORT RUNNING RECORDS (Form 2) Period from _____ to _____, 19__

_____ MUNICIPAL AIRPORT

AIRPORT REGISTER

No. Day	AIRCRAFT TYPE (Make & Model)	REGISTRATION (CAA No.)	TIME OF ARRIVAL	PILOT'S NAME AND ADDRESS	PROPOSED DEPARTURE TIME	SERVICE DESIRED	REMARKS (Local phone or hotel for transient, No. of (Gas, Storage, Cargo, Passengers) etc.)	ACTUAL DEPARTURE TIME
Jan. 1								

In the case of a municipal airport, there may be a question at times as to the value of certain services performed by the manager and submitted as time spent in the interest of the city. It is suggested that the city's aviation committee, board, or commission have the function of approving the monthly time sheet before submission to the city for payment. In this way they can perform inspections, if felt necessary, to clarify any item of possible dispute. This gives the airport committee a continuing function, which is desirable, and will get them on the airport on numerous occasions to see what is being done. This closer cooperation between the operator-manager and the aviation or airport committee is a healthy condition and makes for a stronger airport operation both from the management standpoint and from the budget standpoint.

Basically, the proposal is this:

Make separate contracts for operational activities and management services on even the small airports. These separate contracts should be made with the same individual. This arrangement will stimulate the operator to do the management work, if he gets paid for it, and it will also provide continuing maintenance of the airport since the operator will be financially reimbursed for the work done on the airport during the slack-time periods of the airport operational work. It will encourage the keeping of accurate records which is the first essential of any sound business operation. There will be a clear spelling out of responsibility for the carrying on of the airport business. This arrangement gives the operator-manager a financial windfall during periods of slow aviation business and in many instances will be the determining factor whether or not the operator can continue his business on a particular airport.

★ ★ ★

The U. S. Army's newest helicopter is this XH-26 pulse-jet single-seater, developed by American Helicopter Company. Tip-mounted jets eliminate torque, but small belt-driven tail-rotor is used for added directional control in high winds.
—(American Helicopter Photo.)

Pulse-Jet Army 'Copter

THE United States Army, which is steadily expanding its fleets of lightplanes and helicopters and may eventually use thousands such aircraft, has contracted for production of a single-place helicopter powered with tip-mounted pulse-jet engines. The first of these, American Helicopter Company's XH-26 "Jet Jeep," was demonstrated to the press last month at Los Angeles—smallest and lightest helicopter yet produced for the Army.

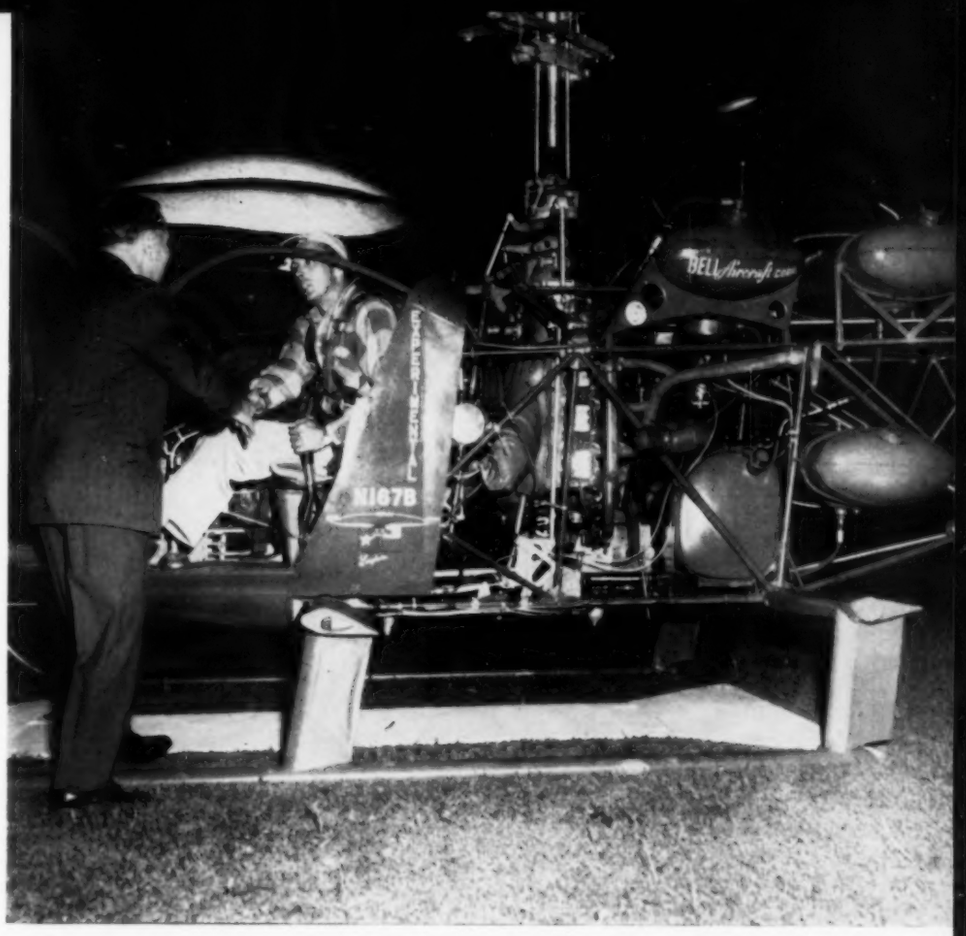
Although Corwin Denney, president, emphasized at the demonstration that his company has no commercial plans for the XH-26 design, its success for the military will undoubtedly influence commercial helicopter progress. Like ram-jet helicopters developed by other companies, the pulse-jet XH-26 eliminates power transmission complexities, weight, maintenance and costs.

With an empty weight of 300 lbs., the XH-26 is said to carry a load of 600 lbs. Top speed is 80 mph., and it will fly an hour and a half without refueling. It stands 6 ft. high. It is collapsible and can be dropped by parachute in a container measuring 5 by 5 by 14 ft., being reassembled in 20 mins. by two men.

Only details released on its power plants are as follows: The pulse-jet engines have only one moving part and can be overhauled in a few minutes. Engines can operate 50 hrs. minimum with no maintenance. Mounted at the rotor tips, the jets are free-swiveling and automatically assume a horizontal position when started. In other words, blade pitch can be changed without changing position of the tip-mounted engines. Engines can be started by pressing a button on the cyclic control stick. This injects air and fuel into the engine, to be ignited by a small spark plug which is then turned off. Engines need no warm-up.

No tail rotor is needed to offset torque since torque is eliminated by the tip-mounted engines. A small tail rotor is used, however, as an aid to precision maneuvering. It is driven by belts. Its failure would be no handi-

(Continued on page 33)



Larry Bell, the manufacturer, is shown congratulating Bell Test Pilot Elton J. Smith as Smith completed his 1,234-mile non-stop flight for a new world's helicopter distance record. Note auxiliary fuel tanks and landing gear fairings. White disc above pilot's head is a sunshade painted on the glass canopy.
—(Bell Aircraft Photo.)

Bell's Record Flight

A 1,234-mile non-stop hop proves helicopter ruggedness and stamina

ALTHOUGH helicopters are thought of as "local" vehicles for hard work at short range, history-making long-distance helicopter flights have recently been made. Leading off was the first helicopter crossing of the Atlantic Ocean. This feat was accomplished in July and August by two Sikorsky H-19's of the Military Air Transport Service when they arrived at Weisbaden, Germany, having been flown by stages a total of 3,800 miles on a delivery flight which began at Westover Air Force Base in this country. Total flight time was 50 hours for the long trip, which lasted 21 days.

Last month Bell Aircraft Corporation followed up with a new long-distance non-stop helicopter flight of 1,234 miles. It was made under sanction of the National Aeronautic Association and its official promulgation as a new world's record is expected. The new Bell record exceeds the existing official helicopter record by 530 miles.

Aside from the records and publicity involved, both the Sikorsky and Bell flights have other values. Most important of these is the proof furnished by the flights of improved helicopter stamina and dependability. The flights point up recent helicopter progress in developing more rugged rotor systems and transmissions. They also indicate improved stability for less pilot fatigue.

In the air 12 hrs., 57 mins., 30 secs., Bell Factory Pilot Elton J. Smith averaged 95 mph., utilizing pressure areas for tail winds which held out the entire distance from Fort Worth, Texas, to Buffalo, New York. So meticulously had Smith and his co-workers planned the flight before take-off from the new Bell helicopter factory at Fort Worth that he landed at the Bell plant in Buffalo within minutes of his flight plan's ETA.

Fuel consumption on the long hop was 159.5 gals., or about 12 gals. per hr. for the 200-hp. Franklin engine. He carried a battery of extra tanks holding a total of 187 gals., and had 27.5 gals. of unused fuel when he landed. He cruised at altitudes ranging from 4,000 to 8,000 ft.

While Bell did not specify any certain improvements represented in helicopter progress by the machine which made the trip, photos show its skid landing gear as having streamlined fairing. This was said to add 4 mph. in speed. The controls apparently incorporated a development to give added longitudinal stability or trim. Smith said the flight was "less fatiguing than an equally prolonged trip by auto." This statement would indicate a great improvement has been made in reducing fatigue from helicopter piloting.

The Bell he flew was 5 years old. It has been operated in practically every configuration conceived by Bell engineers in its lifetime as an experimental and demonstration ship. It has been used to explore numerous control devices. ★ ★ ★

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PAA

Americas by air

Panagra
PAN AMERICAN GRACE AIRWAYS INC.

and COLLINS

Keep good neighbors in touch

Overnight to Buenos Aires . . . daily via the short route down South America's west coast . . . this is the "Red Carpet" air service that has made Panagra one of the leading international airlines in South America. The men who pilot Panagra's luxury fleet of DC-6's and DC-6B's rely on Collins' communication and navigation equipment to maintain daily, overnight service on schedule. Collins research, design and precision production skills provide Panagra with radio and electronic equipment second to none in accuracy and dependability.

Known as the "World's Friendliest Airline", Panagra treats every customer as an honored guest, actually rolling out a red carpet at every airport of call. El Inter Americano, Panagra's deluxe service, is the ultimate in air travel . . . extra fast, with such luxury flight features as the Fiesta Lounge, Gourmet Galley meals, bed-sized berths and pressurized cabins. In its 24th passenger-pleasing year, Panagra remains the only International airline giving daily DC-6 service to our South American neighbors. Panagra's silver streaks across the equator tie North and South America with bonds of acquaintance, keeping good neighbors in touch.

In Radio Communications and Navigation Equipment, it's . . .

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COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd Street, NEW YORK 36 **1930 Hi-Line Drive, DALLAS** **2700 W. Olive Avenue, BURBANK**

Management Takes to the Air

HOW a business man becomes sold on using lightplanes in his business is illustrated by the experience of Willis H. Smith of Chicago. Vice president of Management Systems, Inc., a firm specializing in setting up improved business handling methods for industries on a contract basis, he makes frequent business trips to cities in the area bounded by Chicago, Boston, Philadelphia and Dallas. Because of the nature of his business, these amount to commuting trips.

"My airline travel bills were running $1,500 per month—in other words, I was on the go all the time," Smith says.

His home is 25 miles from the Chicago airline terminal but only 5 miles from Lombard Airport. He inquired at the airport about flight lessons and learned to fly last year, getting his private license in two months. Then he bought a used Cessna 140, a 1946 model with 350 hours on it. In 9 months of using it for his business travels, he put 200 hours of additional time on it.

"It really works out," Smith said, declaring he was surprised to find how convenient his own 2-place airplane could be. He says airport service is wonderful, most places giving him far more consideration than he ever expected to find. Weather Bureau people are very cooperative. While airport control tower operators are helpful, he is finding they are not as responsive on 3105 kc. as they were a year ago. "I suppose it's because there's so much VHF now," he explained. "Looks like I'm going to have to go VHF, too."

Biggest advantage in flying his own airplane is the flexibility it allows in his travels. Frequently he can visit two or three cities in a single day, whereas he formerly got around to fewer of them in the same time when using the airlines. Then, too, he finds he can make it home more frequently in his own plane, spending more time in his office or with his family.

Like many owners of 2-place airplanes, however, Smith is reaching the point where both his flying experience and his travel needs are beginning to justify a 4-place airplane with more capacity and more speed. More frequently than ever, he finds the necessity for carrying a couple of associates or more

Willis H. Smith

luggage on his trips. He would like to have a cruising speed of about 140 to 150 mph., and a non-stop range of about 800 miles. Moreover, his wife has been taking some instruction and their four children would like to make some of the pleasure flights which beckon to the aircraft owner. "Looks as if my 2-place is getting much too small," Smith says, admitting a desire to fly into Canada and Mexico for quickie vacations now and then.

He is also thinking of obtaining an instrument rating. When stretching out his trips with a larger and longer-range airplane, he realizes technique is going to be an important factor in getting fullest utilization of the improved performance he needs.

"This matter of business flying makes more sense than ever, now that I have really gone in for it," the management expert declares. "By flying myself, I cover more territory with more frequent trips and I can take on additional accounts. I do this with less fatigue than ever and actually enjoy flying between stops. I often wonder why I didn't begin business flying sooner. No airplane salesman ever called on me; I sold myself and I'm beginning to think I did a pretty good job of it."

★ ★ ★

RYAN Q-2 PILOTLESS JET DRONE may resemble this, which is all Ryan Aeronautical Company has released on the swept-wing little speedster it builds for the military. Used as a target, it is less than half the size of a fighter but has comparable speed.

AIR REPORT

(Continued from page 7

ticles proclaiming the "arrival of push-button war." Drone aircraft such as the Hellcats use the same basic principles as employed in target planes such as the World War II Culver PQ's.

FIRST FOUR-ENGINE De HAVILLAND HERON WITH RETRACTABLE LANDING GEAR is expected to be demonstrated in the United States by Riley Aircraft, distributors of the de Havilland Dove from which the Heron was developed. The Heron has a cruising speed of 210 mph. at a fuel consumption of 45 gph. It seats 15 persons plus crew.

FIRST FLIGHT OF BEECHCRAFT T-36A TRAINER-TRANSPORT will probably be made at Wichita around first of the year. . . . **TOOLING FOR TWIN-BONANZA ASSEMBLY** has been under way for some time at Beech factory, with military L-23A versions to be produced before commercial deliveries will be made.

REVIVAL OF CIVIL FLYING IN JAPAN is expected to result in considerable export volume for U. S. lightplane and helicopter manufacturers. Beech, Cessna, Aero Commander, Bell and others have already completed sales agreements and have orders on hand for deliveries to Japan.

LYCOMING 260 ENGINES IN GRUMMAN G-44 WIDGEON have provided improved performance and a 500-lb. increase in gross weight. Lockheed Aircraft Service obtained CAA approval for the modification on G-44A Widgeons belonging to Superior Oil Co., and Tennessee Gas Transmission Co. In addition to replacing the 200-hp. Rangers, Hartzell controllable propellers with emergency feathering were installed.

FIRST JET-POWERED FLIGHT BY AN AMERICAN AIRPLANE took place 10 years ago, October 1 being the anniversary. It was a Bell P-59A and was powered with two General Electric I-A turbojet engines, each rated at 1,250 lbs. of thrust. Bell Test Pilot Robert Stanley made the first

U. S. jet take-off from Edwards Air Force Base, Muroc, Calif.

DESPITE AMERICAN CONCERN OVER COMPETITION FROM BRITISH JET TRANSPORT PROGRESS, no economic end result has been accomplished to date by the advent of the de Havilland Comet, says W. A. Patterson, United Air Lines president. He pointed out that two U. S. aircraft manufacturers will invest $60,000,000 developing jet airliners by 1955 with "production commencing in 1958." Describing these, Patterson said they will operate in and out of airports now in existence, will carry 70 to 120 passengers, cruise between 550 and 615 mph., and climb to 10,000 ft. per min.

LOCKHEED TURBO-PROP C-130A CARGO TRANSPORTS FOR USAF will be produced at the Lockheed plant in Marietta, Georgia, which is also producing Boeing B-47 jet bombers.

PROPOSAL TO BUY LAKE CENTRAL AIRLINES has been made by Wisconsin Central Airlines, subject to approval by CAB and stockholders.

TENNESSEE FLIGHT SCHOOLS ASSOCIATION, affiliated with National Aviation Trades Association, has been organized with H. Miller Lanier of Mid-States Flight School at Murfreesboro as president. Membership includes non-school fixed-base operators.

CONTINENTAL TROPHY RACE MIDGETS moved past the 200-mph. peg in closed-course racing during Detroit's International Air Exposition over Labor Day weekend. Several qualified at speeds of more than that, fastest being 203.16 mph. by John Paul Jones of Van Nuys, Calif., in his "Shoestring." But turbulent air kept the 2.5-mile closed-course winners under 200 mph., first place going to Steve Wittman of Oshkosh, Wisconsin, in "Bonzo" at a new record of 197.29 mph.; second going to Bill Falck of Warwick, N. Y., in his "Rivets" at 194.38 mph., and third to Bill Brennand of Oshkosh in a Pitts Special, at 192.31 mph. Jones had finished second at 197.16 mph., was moved back by the race committee to sixth place when his flying was ruled hazardous to other contestants.

MILTON M. TURNER, veteran of both world wars and former civil air attache at Berlin, Frankfort and Vienna, has replaced J. Parker Van Zandt as Deputy for Civil Aviation, Office of the Secretary, U. S. Air Force.

TORNADIC WINDS DESTROYED ONE B-36 AND DAMAGED 106 OTHERS on the ground at Carswell Air Force Base and at the adjoining Convair factory ramp, Fort Worth, on Labor Day.

DELTA-WING FIGHTERS AND BOMBERS dominated the Society of British Aircraft Constructors annual exhibition last month.

RECORD PARTICIPATION IN THE ALL-TEXAS AIR TOUR was expected for the week-long, 25-stop junket October 11-18.

AERO COMMANDER DELIVERY FLIGHT TO JAPAN has been planned, with Jack Ford of Fleetway, Inc., ferry contractors, flying the plane across the North Atlantic and through Europe to India, Formosa, Okinawa and Tokyo. It was purchased by the Asahi Newspaper Company in Tokyo. Aero Design & Engineering Co. in Oklahoma City has now turned out thirty Aero Commanders. Eight are now being completed monthly, according to a progress report by Sales Manager Carl Wootten.

MAJOR REALIGNMENT OF MANAGEMENT AT LOCKHEED involves the following changes: **COURTLANDT S. GROSS** becomes executive vice president as link between the realigned operating organization and a 5-man policy committee; **BURT C. MONESMITH,** formerly manufacturing manager, becomes vice president and general manager, California division; **DANIEL J. HAUGHTON** continues as vice president and general manager, Georgia division; **HALL L. HIBBARD,** vice president, engineering, was added to the management policy committee. New titles and responsibilities went to many California division officials.

Airmen's Calendar

Oct. 9-10—Annual Airport Management Operations Conference, University of Oklahoma, Norman, Oklahoma.

Oct. 9-11—International Northwest Aviation Council, Great Falls, Mont.

Oct. 11-18—4th All Texas Air Tour.

Oct. 14-15—5th Annual New York State Airport Development and Operation Conference, Syracuse, N. Y.

Oct. 25-Nov. 2—International Aviation and Travel Exposition, Navy Pier, Chicago.

Oct. 28-29—Transport Aircraft Hydraulics System Conference, sponsored by Vickers, Inc., Hotel Park Sheraton, Detroit.

Nov. 6-7—SAE National Fuels and Lubricants Meeting, Mayo Hotel, Tulsa, Okla.

CAA SURVEY OF AERIAL APPLICATOR OPERATIONS shows total of 38,656,929 acres were dusted, sprayed, seeded, fertilized, defoliated, baited by airplanes during 1951. Breakdown shows 17,649,802 acres dusted; 12,919,629 acres sprayed; 2,127,457 acres fertilized; 2,069,013 acres seeded; 1,687,474 acres defoliated; and 641,651 acres baited. Cities and towns sprayed 1,561,913 acres in fighting pests. Aerial applicators dispersed 275,807,808 lbs. of dust, 218,192,333 lbs. of fertilizer; 35,654,711 gals. of spray; 91,118,408 lbs. of seed and 2,386,545 lbs. of bait.

A FOUR-STATE REGIONAL NATA CONFERENCE was conducted late in August at Myrtle Beach, S. C., by the states of Georgia, South Carolina, North Carolina and Virginia, with Ed Marshall as steering committee chairman. "Selling Aviation" was the theme. One activity described by Tom Ferguson of Albany Air Service of Albany, Georgia, is a rural newspaper delivery he has operated six years with 3 lightplanes, delivering 5,700 papers daily. "I haven't lost 4 days due to weather during the entire six years," he reported.

McDONNELL AIRCRAFT WILL PRODUCE ITS F-101 VOODOO FIGHTER IN QUANTITY FOR THE

(Continued on page 34)

Business Flying Is For Busy Men

Because more Cessnas are used for business flying than ever before, the progressive Factory-Authorized Cessna Service Operators listed below are well acquainted with the needs of the busy men who fly Cessnas.

We know, from everyday contact and years of experience with them, that Cessna owners are successful in their business, are leaders in their business, and are flying for sound business reasons. We seek their patronage and work to retain it by offering them the most business-like aircraft servicing available — Factory-Authorized Cessna Service.

For busy people in business with their Cessnas, we specialize in nation-wide Cessna Flat-Rate Services. Every Cessna job has been carefully studied and analyzed. Records of past jobs are gone over and new methods applied for efficiency. The result is a job analysis which not only assures peak efficiency and minimum costs but enables us to quote dependable figures and schedule job completions with certainty. This eliminates delay and wasted time on the ground, allows busy executives to make more trips more frequently for full aircraft utilization.

To make the most of your Cessna's usefulness, visit the Authorized Cessna Service Stations listed below.

These progressive Cessna Authorized Service Shops offer flat-rate service.

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Aviation, Inc.
15th Street Air Park
Tulsa, Oklahoma

Champ's Flying Service
Municipal Airport
El Paso, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
Municipal Airport
Houston—Texas—San Benito

Dal-Tex Aviation, Inc.
Highland Park Airport, Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airport
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

CESSNA CASE HISTORIES

DON B. WALLACE, ST. CLAIR, MICH., operates his own wholesale lumber business, Don B. Wallace, Inc., importing mahogany from South America as well as selling domestic lumber. He owns a Cessna 170—uses it constantly. Two-thirds of his flying time is calling on manufacturers as far away as Florida and Maine. Many of his customers are off the beaten track and, with his Cessna, he says he can serve them *better* than closer suppliers. It also enables him to follow up small, out-of-the-way business leads he formerly had no time for. He says, "The plane has brought me more customers simply by enabling me to contact them. I feel my future business definitely relies on my Cessna." He likes Cessna's speed—high-wing visibility—landing gear—and all-around comfort and economy.

AL R. WALKER, BROKEN ARROW, OKLA., owner of the Crystal and Nusho Theatres in Broken Arrow finds it's cheaper to fly his 1951 Cessna 170 than to drive an automobile. Walker uses his Cessna to rush new pictures to Broken Arrow. He says, "Competition for late films is stiff and by using my plane, I can run the same pictures that are currently playing in Tulsa. No other small town theatres are doing this." And he flies to cattle sales all over the state, buys stock for his farm. Walker, who has owned 13 different makes of planes (including several far more expensive ones) considers his Cessna 170 the best of the lot. He particularly likes the landing gear and Cessna's economy. Except for gas and oil and regular "checks" he says his Cessna hasn't cost him a cent!

Try it for SIZE...

SPEED—COMFORT—AND MANEUVERABILITY, TOO!

Step through that big wide door . . . settle down in the upholstered foam-cushioned seat . . . and adjust it to *your* leg length. Then look around! There's worlds of room for four big men in the Cessna 170. Now—*take off*. Notice how quickly this airplane responds to the controls . . . how smoothly she cruises. Wonderful soundproofing—individual ventilators—every luxury. It's hard to believe that this *all-metal*, 4-place 170 costs only $7245 f.o.b.* Wichita.

*With standard equipment. Prices subject to change without notice.

TODAY, CESSNA IS NO. 1 IN PRIVATE PLANE SALES!

Cessna 170

With Super-Lift Flaps!

(Standard Equipment)

These remarkable flaps reduce your landing speed more than 10%, shorten take-offs, provide quick "Super Lift" over trees, wires and other obstructions. With Cessna's famous patented landing gear, they make usable airports of many short, rough fields.

Also see the CESSNA 190 SERIES

Cessna's "Executive" series . . . the best big airplane value on the market. Seats 5 with comfort—cruises at fast, airline speeds . . . carries up to 200 lbs. of luggage . . . has every important comfort and safety feature.

FOR MORE INFORMATION . . . phone your nearest Cessna dealer (listed in the yellow pages of your telephone directory) or mail this coupon to us today.

Cessna Aircraft Co., Dept. FM-10
Wichita, Kansas

Please send information on the Cessna 170_____
the 190_____ I am interested in a Cessna for
business_____ for farming_____ other_____.

Name_____

Business Address_____

City_____ County_____ State_____

WANTED!

300,000 SKYWATCHERS

AIR ATTACK!... This alarm could be sounded in the U. S.—tonight, tomorrow, *any* time! If it is, then time will be priceless—every moment vitally important.

Fortunately we do have a warning system—a combination of radar stations and volunteer civilian skywatchers, the Ground Observer Corps. And the Air Force has protective squadrons of Lockheed Starfire interceptors ready to answer any alarm—climb quickly to the attack—locate and knock out invading bombers in any weather, day or night.

But unfortunately our warning system is not complete. We need 300,000 more volunteer observers! WE MUST HAVE MORE GROUND OBSERVER CORPS MEMBERS TO ASSURE 24-HOUR WATCH OF ALL VULNERABLE U. S. AREAS.

Radar cannot do the whole job, because ground stations can't always spot planes flying under 5,000 feet. The only immediate answer is sheer man power—patriotic men and women who will donate just a few hours each week to the security of the U.S. and themselves.

Too few people realize the need or urgency. *You* can help—by joining the Ground Observer Corps and by spreading the word. To volunteer, simply call your nearest Civilian Defense Office. Or send a postcard to Ground Observer Corps, United States Air Force, Washington 25, D. C.

Lockheed

Aircraft Corporation

Burbank, California, and Marietta, Georgia

Look to Lockheed for Leadership

ENEMY AIRCRAFT COULD PENETRATE U. S. DEFENSES

Early this summer top U.S. Air Force officials met with Civil Defense directors from 46 states and four territories, and reviewed in confidential detail the current efforts to defend America from surprise enemy attack.

"Despite a $300,000,000 radar fence around the nation's perimeter, gaps exist through which enemy aircraft could penetrate our defenses undetected," the meeting was told.

That's why America needs a total of 500,000 civilian skywatchers as members of the Ground Observer Corps. Nearly 200,000 have already volunteered.

"The only practical means of filling the gaps in our defenses is through a 24-hour operation by civilian volunteers," the meeting was told.

Why isn't America's radar network sufficient?

Defense gaps exists because of radar's line of sight principle, and radar's failure to penetrate opaque masses. Every mountain, every hill casts a shadow behind which enemy aircraft could sneak undetected. Even in perfectly flat country the curvature of the earth shortens the effective range. Equally alarming, radar is susceptible to jamming.

These gaps cannot be filled by Air Force personnel due to the staggering expense. That's why civilians are needed in 27 perimeter states to man Ground Observer Corps stations 24 hours a day. Here is a critical, patriotic job that requires just a few hours a week from each volunteer.

Aircraft too are an important part of our national warning system and of course are the backbone of defense against attack. Three advanced Lockheed planes play a vital role:

The WV-2 *Super Constellation* Early Warning Aircraft, developed for the Navy and the Air Force to extend radar's range in a whole new concept of national defense.

The P2V *Neptune* Navy Patrol Bomber, charged by the Navy with anti-submarine patrol and protection of U. S. coastal waters.

And the F-94C *Starfire*, the nearly automatic all-weather interceptor, which does the final job of climbing to the attack at terrific speed, locating the invaders, and shooting them down with more than human accuracy.

When the U. S. has all necessary planes and personnel—civilian and military—it will be difficult for enemy aircraft to penetrate U.S. defenses.

OPERATION BUDWORM

(Continued from page 19)

and by pin pointing. The fact that an average 97% kill was recorded, speaks well for the navigational skill of the pilots taking part.

"Operation Budworm" established one fact firmly in the minds of the forest industry, namely, the ability of the agricultural airplane to successfully cope with a problem of pest control which ground methods in forty years of trying had definitely failed to achieve. A substantial research foundation fund, subscribed to by the pulp and paper companies across Canada, has been set up for the purpose of further study and experimentation with aerial methods of forest pest control.

The operation was to provide the proving ground for de Havilland's new Beaver aerial sprayer. As a crop sprayer in Saskatchewan, the Beaver had already proved its ability to spray as much acreage in a day as two 140's, one 170 and a Tiger Moth combined. As a duster sowing superphosphate in New Zealand, it had equalled the daily acreage of six Tiger Moths. De Havilland was anxious to test its work capacity flying alongside the Wasp-powered war surplus Stearman—popular choice of a great many aerial applicators.

Flying at a height of 100 feet above the tree tops at a speed of 100 mph., the Beaver has a swath width, allowing for overlap, of 140 feet (maximum swath width—180 feet). This gives it a dispersal rate of 27 acres per minute. The Stearman, flying at a speed of 80 mph. with a swath width of 80 feet (maximum 90 feet) has a dispersal rate of 13 acres per minute. Making allowance for a turn-around time in each case of 4½ minutes, and a ferry flight of 15 minutes each way, the Beaver can average 10 acres per minute, against 5 acres per minute for the Stearman. The comparative figures in the table form are as follows:

	Stearman	Beaver
Spray Tank Capacity, U. S. gals.	125	240
Fuel Tank Capacity, U. S. gals.	40	95
Turn-around Time, minutes	4-4½	4-5
Swath Width, ft	80-90	140-180
Spray Speed, mph	80	100
Gross Weight, lbs.	3,600	5,100

At 5,100 lbs. gross weight, the Beaver can take off with zero wind in a distance of less than 600 feet, and climb at a rate of 1,200 feet per minute. High field elevation and abnormal temperatures have very little adverse effect on this impressive performance. A gross weight of 5,100 lbs. could not by any stretch of imagination be considered a critical overload for the Beaver. Flying at a speed of 100 mph., the Beaver's 50% of power in reserve gives it extraordinary zooming ability to pull-up over ground obstacles or down drafts. The ship will maintain altitude flying at a speed of 60 mph. (stalling speed is 42 mph.).

The Beaver aerial sprayer can be converted back to its normal configuration as a 7-8 place utility airplane in an hour's time. With standard fuel tanks, it has a range of 630 miles for ferrying. A belly tank, which can be quickly installed or removed, increases this range to 910 miles.

On a 1,000-hour-per-year utilization basis, the Beaver's operating costs, computed by the ATA method, work out at $26.78 per flying hour. The Beaver tallies on practically every count with the findings of the CAA-sponsored research program to determine the ideal specifications for an agricultural aircraft. Its high basic design and performance qualifications, plus exceptionally low operating costs, should ensure for the "Eager Beaver" a wide acceptance on the part of agricultural operators. ★ ★ ★

PULSE-JET 'COPTER

(Continued from page 24)

cap except possibly during precision handling in very high winds.

Denney says the little XH-26 is but the first in a complete series of machines his company will develop. For short-haul, heavy-payload operations, he says the pulse-jet 'copter offers "enormous potentialities."

"It is intended that the XH-26 be merely the first of a large family of different-size pulse-jet helicopters," he said. "In the large-size class, this company is designing and constructing a pulse-jet rotor system for application to a helicopter capable of transporting 4 tons of payload."

American Helicopter Company was organized in 1947. It won a design competition and was awarded the contract for the XH-26. All airframe and rotor development has been accomplished at its two Manhattan Beach (California) plant facilities, and its power plant development has been conducted at its Mesa (Arizona) facility. The company has more than 100,000 sq. ft. of production space.

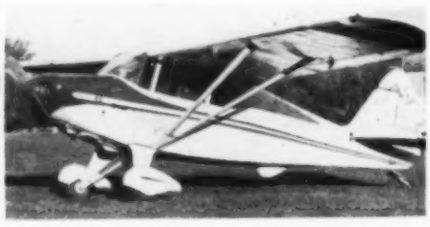
In addition to Denney, American Helicopter Company's directors include the following: William C. Jordan, formerly president of Curtiss-Wright Corporation; Clarence M. Belinn, president of Los Angeles Airways; John A. White, secretary, and Joseph F. Schneider, treasurer. ★ ★ ★

PIPER

AMERICA'S FAVORITE

Last year half the business, farm, and personal airplanes sold in the United States were built by Piper. This year the predominant preferance for Piper continues. Here's why . . .

. . . because Piper planes have proven so useful, so practical for their owners—helping them get more done in less time.



• Another reason why Piper stands at the head of the list is that the Piper dealers and distributors offer the Piper owner the kind of service that means safe, enjoyable and economical flying. Their long specialized experience with Piper aircraft is your assurance of top-notch service after sale, a mighty important factor to consider when buying an airplane.

• Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

Arizona
ANDERSON AVIATION COMPANY, INC.
Sky Harbor Airport
Phoenix

Louisiana-Mississippi
LOUISIANA AIRCRAFT
Municipal Airport
Baton Rouge, La.

Oklahoma
SMYER AIRCRAFT SALES & SERVICE
Municipal Airport
Ponca City

Texas
BROWN FLYING SERVICE
Municipal Airport
San Antonio

JACK ROBINSON FLYING SCHOOL
Meacham Field
Fort Worth, Texas

PARKER-HUETT AVIATION COMPANY
White Rock Airport
Dallas

SOUTHWEST AIR RANGERS
Municipal Airport
El Paso, Texas

WICHITA FALLS AIR TRANSPORT COMPANY
Municipal Airport
Wichita Falls

AIR REPORT

(Continued from page 29)

AIR FORCE, with no numbers or dollar value disclosed. The F-101 is a long-range twin-jet escort fighter.

TEMCO AIRCRAFT'S NEW SPECIAL ASSISTANT TO THE PRESIDENT is Capt. A. C. Olney, USN-Ret., Veteran of 26 years in Naval aviation with piloting experience in a wide variety of aircraft. . . . **CORPORATE AIRCRAFT OWNERS ASSOCIATION** has announced appointment of Jean H. DuBuque as executive director and secretary. He succeeds Herbert Fisher, who has joined the New York Port Authority. . . . **LEONARD W. ASHWELL** has been named deputy chief of the CAA's Air Carrier Safety Division, succeeding F. A. Allen who was transferred to Burbank, Calif., as supervising agent. . . . **WALDRON F. SCHANZ HAS RESIGNED AS FLORIDA AVIATION SUPERVISOR** to become regional sales manager for Southern Aero Sales Company at Atlanta, Georgia.

OVER 600 PERSONS AND 200 LIGHTPLANES FROM 36 STATES attended the 7th National Flying Farmers convention August 28-30 at Auburn, Ala. Tex Anderson of Medina, Texas, was re-elected president.

TAKE A

"QUICKIE VACATION"

FILE YOUR FLIGHT PLAN FOR

EAGLE ROCK RANCH

Discover this fabulous, millon-dollar ranch club for yourself . . . swim, golf, fish, ride, or relax in the luxurious air-conditioned clubhouse.

2,600-foot CAA Approved All-Weather Landing Strip

Just a short flight from anywhere in Texas to this resort paradise. Air strip is on your air maps.

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Eagle Rock Holiday Homes and homesites available for those who want a picturesque hill country retreat, with all the facilities of a fine country club. Seeing is believing . . . fly up this week.

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Eagle Rock Ranch Club and Resort
Wimberley, Texas

MORE POWER FOR AMERICA'S MOST VERSATILE AIRPLANE

Super Cub sprayer carries 110 gals., duster 18 cu. ft. of chemicals. Pipers are most widely used for aerial application.

30,203 feet is world record set by Caro Bayley in Super Cub. Below, a Cub lands 10,000 feet up Alaskan mountain.

Army's L-21 has same remarkable Super Cub performance. Below, "quarter ton" truck version is handy freighter.

NOW 135 Horsepower Gives Performance to Spare

The famous Piper Super Cub—the plane that doesn't need an airport—can operate from even shorter, rougher, higher fields with 135 horsepower now as standard equipment.

Capable of taking off and landing in just a few lengths of its own fuselage, the new Super Cub "135" has even more sensational performance than its predecessor which already holds world altitude records for light landplanes and seaplanes and which has carried, experimentally, a load two and a half times its own empty weight, an unofficial record!

So useful is the Super Cub that hundreds are in daily use on farm and ranch and by many industries as a general 2-place utility plane or "quarter-ton" truck flying men and materials into spots where other planes can't go.

The PA-18-A—agricultural version of the Super Cub—is the finest plane available today for aerial application of chemicals and the only one in volume production.

The L-18 and L-21—military models of this same versatile plane—are in use with the United States Army and a number of NATO nations.

If you have a tough flying job to be done or if you want an airplane with performance to spare, you can't beat the Super Cub. For brochures on the Super Cub and PA-18-A, write Piper Aircraft Corp., Lock Haven, Pa., Dept. 10-F.

PERFORMANCE

Top Speed (mph)	127
Cruising Speed (sea level)	112
Cruising Speed (at 7000')	119
Stalling Speed (mph)	38
Take-off Run (feet)	200
Rate of Climb (ft./min.)	1,050
Service Ceiling (ft.)	20,500
Absolute Ceiling (ft.)	22,500
Cruising Range (36 gals.) miles	500

SPECIFICATIONS

Engine*	Lycoming 135 hp.
Gross Weight (lb.)	1500**
Empty Weight (lb.)	845
Useful Load (lb.)	655**
Wing Span (ft.)	35.3
Length	22.4

*Super Cub also available with 90 hp. Continental.
**2,070 pounds gross permitted for special purpose flying under Part 8 of CAR.

TWIN-BONANZA

(Continued from page 17)

Carco's single-engine Bonanzas and Twin-Bonanzas shuttle back and forth between these two terminals every day on frequent, strictly-timed shuttles. In less than five years, they have carried almost 60,000 passengers and 1,300,000 lbs. of cargo. By far the heaviest of these loads have been piled up by the single-engine Bonanzas, the Twins having been used only for the last year. But the Twin-Bonanzas are catching up rapidly with their payload advantage over the smaller Beechcrafts.

One Twin-Bonanza can do a lot more work than one Model 35—but not quite as much as two single-engine Bonanzas. Three of the Twins can carry as many passengers as five of the smaller ones. Or, looking at it another way, it takes two single-engine Beechcrafts to carry the average Twin-Bonanza load, which includes 3.5 passengers. This advantage could be better, Clark Carr believes. He is convinced the Twin-Bonanza's cabin and baggage space could be more effectively arranged so that 6 passengers plus the pilot could be accommodated on short-haul operations.

"Although the Twin-Bonanza offers two additional passengers now, its chief justification has been the safety factor provided by two engines," Carr said. "The pay-off comes when the Twin-Bonanza operates under conditions in which the single-engine Bonanza would remain idle in the hangar, such as initiating a flight after darkness."

While instrument flying also offers increased utilization for the new Twin, Carr has limited instrument operations in it to pilot proficiency training. For one thing, he wanted to build up time on the propellers, these having new and unproved feathering mechanisms. His wisdom in this was confirmed by two precautionary landings necessitated during the first year of Twin-Bonanza flying, each involving the propeller governing and feathering mechanism. In each case, the propeller could not be feathered and went into its full flat-pitch-stop position, but precautionary landings were made despite difficulties and no damage was suffered in either case. "These failures were of parts which have now been re-designed and strengthened, and hundreds of hours of subsequent and satisfactory operation attest to the fact that the trouble has been completely corrected," Carr emphasized.

Other factors also affect Carr's policy of not flying the new airplanes under actual instrument conditions. One is the high terrain where most of his flying is done—at Albuquerque and west of there. While the Twin-Bonanza at gross weight can maintain more than 7,500 ft. of ceiling with one prop feathered, this excellent single-engine performance is not adequate for such high country under actual instrument conditions. The solution to this will be supercharging, which Lycoming is developing for the 260's. It should add a couple of thousand feet to the airplane's single-engine ceiling and this would be a useful, if minimum, ceiling for his operations, Carr says.

Even then, however, Carco faces a CAA regulation which requires a co-pilot for instrument flying under actual conditions in the kind of revenue flying Carco does. While Carr agrees this is justified on larger transports, he believes the Twin-Bonanza should be exempt from this regulation affecting for-hire flying. Carr explains himself as follows:

"Since the Twin-Bonanza was designed and is arranged so as to be flown efficiently and effectively by only one pilot, and since no intelligent operator would attempt to fly it in really tough instrument conditions such as icing and high terrain would provide, I can not find justification for applying the CAA's regulation to it. Our Twin-Bonanzas have been used considerably for pilot proficiency training and checks under simulated conditions, and there is no reason to believe that, within their limitations, they would not perform satisfactorily under actual conditions."

Carr has been impressed by the Twin-Bonanza's aerodynamic excellence. For example, there has been one incident in which power failure was experienced in the left engine at the most critical time after take-off from the downhill, down-wind Los Alamos air strip at 7,100-ft. elevation and with the Twin-Bonanza loaded almost to full gross weight. Thanks to aerodynamic efficiency and expert piloting, the airplane was flown out safely.

This case is also used by Carr to point up the need for engine supercharging, which would have afforded a much greater safety factor. "We got by, but that take-off was not accomplished with any comfortable margin and I am not sure it could be accomplished at all with an old airplane which had grown somewhat in weight, which was less aerodynamically clean and whose remaining good engine was near the end of its normal run-out period—we got by with a brand-new airplane, brand-new engines."

(Continued on page 40)

FLUSH-MOUNTED IRON-CORE LOOP features the new "Executive," a heavy-duty ADF now offered for civilian use by the LearCal Division of Lear, Inc., and its 130 distributors. Known as Model ADF-14, it is a re-designed version of the popular ADF-12. Four basic units are shown here, tuner (left) and loop at top and amplifier (left) and azimuth indicator at bottom. All are identical to the rugged equipment being produced for the military. Of special interest is the revolutionary new loop, which is smaller than previous types and can be flush-mounted to eliminate external "blister" housing. Its outstanding features are a ferrite core loop and electrical quadrantal error corrector for greater accuracy, smoother response, improved sensitivity, higher gain and better signal-to-noise ratio. Entire loop assembly is moisture-sealed and fungus-proofed.

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all over the nation whistles are blowing and offices are closing signaling the end of another day. But at Alamo Aviation you will find things buzzing as normal. We are on the job 24 hours a day, and whether it's line service, maintenance, charter, or a demonstration of a new Beechcraft you want, we are prepared to give you immediate service.

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Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey
also
Logan Airport
East Boston, Mass.

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Currey Sanders Aircraft Co., Inc.
Downtown Municipal Airport
Shreveport, La.

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

Hunter Flying Service, Inc.
Hunter Field
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Ohio Aviation Company
Dayton Municipal Airport
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J. D. Reed Co., Inc.
Municipal Airport
Houston, Texas

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Indianapolis, Ind.

Tradewind Airport Corp.
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Tulsair Distributors, Inc.
Hangar 5, Municipal Airport
Tulsa, Oklahoma

Wings, Incorporated
Wings Field
Ambler, Pennsylvania
Philadelphia International Airport
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TWIN-BONANZA

(Continued from page 36)

Praise is given the Lycoming 260's in the Twin-Bonanza by Carr, who says they have performed splendidly. He also praises their simple and rugged installation, declaring engine accessibility is "wonderful." But he says the magnetos have proved extremely troublesome and describes them as being unworthy of the fine trade name they bear. Carr has a full and specific analysis of these magneto troubles with which the manufacturer can make improvements.

While he has plenty of praise for the Twin-Bonanza itself, he also has some suggestions which he hopes can be used in improving it. First among these is more effective utilization of cabin and baggage compartment for seating pilot and six passengers, emphasizing this would be for short-haul operations only. In this Carr offers convincing justification—a sixth passenger seat would be worth a minimum of $2,600 per year per airplane to him. This is established by his experience of having to send along a single-engine Bonanza with a Twin-Bonanza when there are six passengers for a schedule—the records show this happens twice a week.

Carr says both Beech and Lycoming have been extremely cooperative with him, performing many valuable services in having their service departments maintain close contact with the two airplanes in their first year of operation.

"Bugs" have been remedied as quickly as they have become known. Among such problems still being studied are the doors, both for the cabin and the baggage compartment, and the windows. The doors should be sturdier, better hinged and more ruggedly latched. The same can be said of the windows, which are liable to spring open slightly at high speeds, such as in a cruising descent, thus cooling the cabin too much in winter and creating a noisy whistle. A higher permissible floor loading is needed in the baggage compartment and maintenance experience has shown that either a hinged instrument panel or an access door to it from the forward baggage compartment is needed.

"We are convinced that the Twin-Bonanza is the best airplane in its class and to us of Carco it represents a truly splendid forward step," Carr said. "Our mention of minor service discrepancies, as well as of larger seating, loading and cabin arrangements, are offered with the conviction that modifications can be incorporated without sacrifice of structure, safety or performance and to the still further improvement and usefulness of this superb twin-engine aircraft."

Considering all of this, an observer

views the first year of Twin-Bonanza commercial operations by Carco Air Service as a valuable form of field testing. Lessons learned can be applied to production models. With the kind of utilization at Carco, the Twin-Bonanza can not hide many, if any, "mysteries" from Beech, Lycoming and suppliers of other equipment used on the airplane.

No production version of the Twin-Bonanza has yet been delivered, only the original 11 planes having been produced. The factory at Wichita has been tooling up to produce an undisclosed number of Twin-Bonanzas for the military, which designates the model as L-23A. It is assumed that civilian deliveries would follow these military deliveries.

While Twin-Bonanza performance in the Carco operations is for elevations above 5,000 ft., Carr and his associates emphasize that the light twin will do everything Beech has claimed for it. Factory performance data include the following figures, which are based upon operation at full gross weight (5,500 lbs.):

High speed at 2,500 ft., mph. 202.5

Cruising speed at 5,000 ft. (65% power), mph. 182

Cruising speed at 10,000 (65% power), mph. 190

Range (5,000 ft., 65% power, no reserve), miles 950

Range (10,000 ft., 50% hp., 163 mph., no reserve), miles 1,155

Rate of climb, 2 engine, sea level, ft./min. 1,500

Rate of climb, 1 engine, sea level, 50 fpm., with feathered propeller, ft./min. 310

2-engine ceiling, 100 fpm., ft. 19,000

1-engine ceiling, 50 fpm., feathered prop, 50 fpm., ft. 7,500

Take-off over 50-ft. obstacle, sea level, no wind, best performance, ft. 1,350

Take-off over 50-ft. obstacle, sea level, no wind, CAA approved method., ft. 1,520

Landing distance over 50-ft. obstacle, sea level, no wind, best performance, ft. 1,210

Landing distance over 50-ft. obstacle, sea level, no wind, CAA approved method, ft. 1,510

Stalling speed, gear and flap extended, mph. 64

Stalling speed, gear and flap retracted, mph. 75

Weight empty (includes 70-lb allowance for radio), lbs. 3,800

Weight gross, lbs. 5,500

Useful load, lbs. 1,700

Fuel, gals. 134

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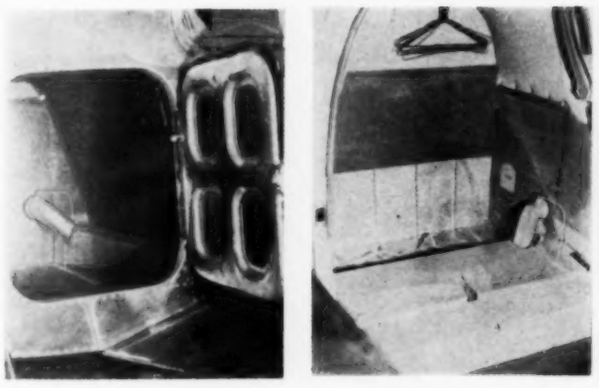
● AIRCRAFTSMEN 10 GAL. AUXILIARY FUEL TANK FOR BONANZAS



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5. Rear seat in Models A-35, B-35 and C-35 can be removed as before installation and cargo space is not restricted.

Kit $195.00, Installed $250.00 (Specify Aircraft Serial Number when ordering.)

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Deluxe Curtains and Windshield Visors $48.50	Map Case and Twin Thermos Bottle Rack..... $25.00
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Questions and Answers for Airport Operators

How To Analyze Maintenance Needs for Airport Leases

QUESTION: The operator who has a lease on our small, unpaved municipal airport is required to maintain the field in return for the privilege of using the hangar and operating on the field. I've just been elected mayor and both the operator and I need more information on his responsibilities. What do you think he must do to satisfy the maintenance provision of his lease?

ANSWER: The general stipulation in a lease that the tenant maintain the field is frequently the cause of inferior maintenance due to the lack of specific requirements. A field consists of many elements requiring maintenance. This is true of even a small turf field. Unless the lease is specific in its requirements it is difficult to enforce. This is due not only to the generality of the terms but also to the financial inability of the operator in many cases to do a complete and adequate job within the limits of the commercial worth of the lease to him.

This may, in fact, result in progressive deterioration of the facility. If the field is one constructed or improved with Federal aid and as a result subject to the maintenance provisions of a Sponsor's Assurance Agreement, the passing of the maintenance obligation on to the lessee does not relieve the owning agency of its obligations to maintain.

Clearly the entire maintenance problem should be analyzed to determine only those maintenance needs required of the operator which he can reasonably do within the economic range of the lease's value to him and within the capabilities of the equipment accessible to him. Without this, each party tends to rely on the other and the airport suffers. In your case it may be advisable to amend the lease in a realistic way as a result of such study.

To give you more clearly an idea of what we mean, let us set down the elements to be maintained.

Landing Area Surfaces: All the area within the boundary markers, whether the field is designed in strips or as an all-over field, are presumed to be usable and that presumption implies maintenance. As access to that area includes taxiways and ingress and egress from the hangar and tie-down areas, that means maintenance of the surfaces of such areas also.

Maintenance of such areas includes these items:

(1) Mowing as frequently as necessary to keep turf in good condition and grasses no higher than are safe for use of small aircraft.

(2) Filling in of ruts, holes, washes and eroded areas, re-seeding same if necessary.

(3) Correction of major erosion to stop the progress of further erosion and repair damage already done. This may be a considerable item of cost if neglected and may require the use of equipment not accessible to the operator.

(4) Creation and maintenance of strong turf cover. Erosion by wind or water, holes, ruts and washes are the natural result of failing, thin or lost turf. The best protection then is a well-nourished, healthy turf. If the turf is not improving at a rate likely to provide this protection it may be necessary to apply fertilizing material to bring it up to reasonable standards. Depending on the soils and grasses involved, this requires specific

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240 U. S. gallons spray fluid capacity . . . 48-foot wide boom, giving a spray swath of 80 to 140 feet wide . . . Will cover 240 acres (1 gal. per acre) in one 20-minute flight . . . 2 hours fuel for spraying . . . 4 hours fuel for ferrying . . . A speed range of 60 to 110 mph. with safety and precision . . . Can operate from quarter-mile strip with full spray load . . . spray equipment readily removable —can be loaded in cabin for ferrying.

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Here's Why "C" is BEST

1 NON-CRAZING—Can be used on glass or any plastic—contains no harmful solvents. Will not craze or cloud.

2 WORKS FAST—Quickly removes oil spatter, grime and bug juice.

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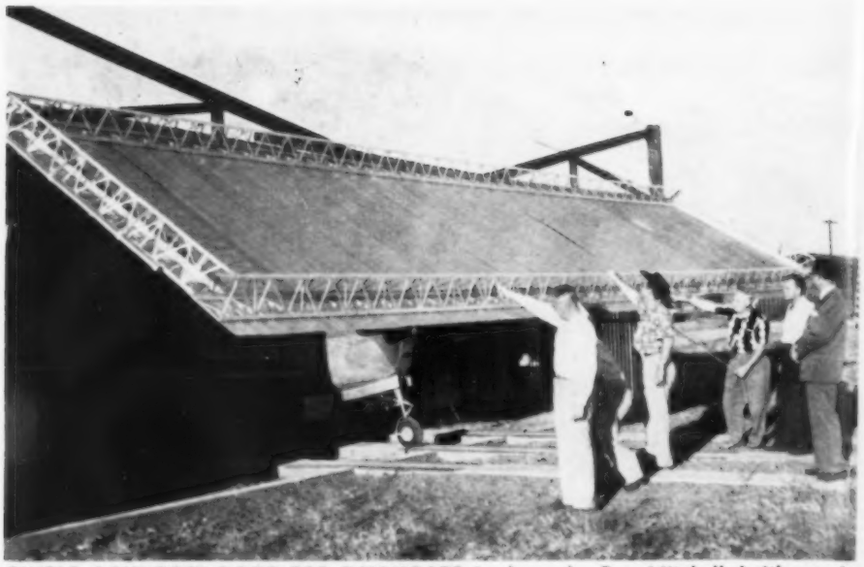

SIMPLE, LOW-COST DOOR FOR T-HANGARS is shown by Don Mitchell (with rope), president of Mitchell Industries, Mineral Wells, Texas. The light-weight, low-cost hangar door of his own design uses only $140 worth of material—$100 worth of ordinary pre-fab TV tower and $40 worth of corrugated aluminum sheet. All of the frame strength of the door is provided by the TV antenna tower, which he bought for $1 per running foot. Weighing only 200 pounds, the door is easily opened and shut by one person. Small counter weights keep it in balance and permit the use of two small bolts for attachment to the frame of the hangar. Mitchell used scrap pipe for the rest of the hangar. It houses his company-owned Beech Bonanza.

remedial action and aid should be sought from an agronomist, the state agricultural school or the CAA District Airport Engineer in determining type and quantity of the agent necessary to promote healthy turf. This may be an item the cost of which would be a hardship on the operator.

(5) If the field as constructed relies upon drainage facilities of any

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IMPROVED CIRCUITS! The Superhomer "built-in" double noise limitors shield engine noise and increase omni accuracy.

LIGHT WEIGHT! Ten pounds installed, including antennas and leadins. Panel space: 5¼" by 6⅞" Case depth: 10¼"

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nature for run-off of water, these require inspection, repair and cleaning. Ditches should be cleared of obstruction and banks kept stable, inlets and lines should be cleared of silt, brush and debris to permit unobstructed flow. Outfalls should be inspected and any by-passing or breakdown corrected to avoid erosion destroying their effectiveness.

(6) The airfield markers should be kept in repair and repainted when they become dingy. If you have a segmented circle, it should be kept clean and white and the grass cut carefully around it so it won't be obscured. Windsocks or other wind indication devices should be kept operative and clean for visibility.

(7) If you have lights, they require maintenance whether used constantly, occasionally or only in emergencies.

Other Land Areas: (1) Those areas within the boundaries of airport land owned by the municipality but outside of the landing field and taxi areas proper require maintenance. Erosion must be prevented before it encroaches on the landing area and to preserve tillable acreage. Where drainage structures exist in these areas they need maintenance for preservation.

(2) If such lands are permitted to lie idle and untended, weeds naturally follow. When dry they are a fire hazard and at any time they are unsightly. Mowing is a remedy. Farming not only avoids the weed nuisance but produces revenue, provided that good farming practices are followed to avoid wind and water erosion when such areas lie fallow.

Hangars and Buildings: (1) Inside and out, airport buildings need and require maintenance of floors, walls, roofs, doors and plumbing. It is not unusual for an owning agency to require that a tenant perform such maintenance in return for nominal or low rental for the use of the structure. The complexities and the costs of maintenance will vary widely with the type of construction and materials used. This is especially true of trusses, roofs and sliding doors.

No matter in whose hands the responsibility for such maintenance lies, periodic inspections should be made by the owning agency. If repairs when needed are beyond the resources of the tenant, then this should be recognized and repairs made by the owning agency to avoid deterioration into uselessness.

All electrical circuits, connections, boxes and switches should be periodically inspected to prevent fires from this source.

Fences, Gates and Cattleguards: These need inspection at frequent intervals and repairs as needed. When not in repair, access is possible to livestock with attendant hazard to aircraft.

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The executive who must travel with a staff of several people will find the big, roomy TOURIST can't be beat by any plane near its cost for space and load-carrying ability.

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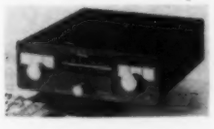

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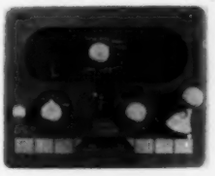

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and continued maintenance of airport entrance and access roads in all-weather condition is as essential to air transportation as is sound maintenance of landing areas. We have seen airports completely inaccessible to cars after a heavy rain for lack of maintenance, and good maintenance of such roads and culverts may in many cases be beyond the equipment resources of an operator.

We have gone into considerable detail in outlining the possible maintenance needs of a turf airfield with one hangar with the intent of pointing out the dangers of any general obligation to maintain. In any arrangement under which there is an obligation to maintain an airport by the lessee, the specific maintenance requirements imposed on lessee or lessor should be designated in specific terms on a realistic basis. Many of the maintenance needs listed above are more easily and economically handled with the equipment and manpower of the owning agency.

If the maintenance obligations of the lessee are not realistically set, either the lessee must fall short of performance or he must accomplish that performance at a cost completely out of keeping with his potential return. This becomes increasingly oppressive as the size and complexity of the airport increases.

Clean Toilets

QUESTION: What can be done to solve the problem of dirty toilets along a hangar line? In my terminal building I keep the rest rooms as spotless as my bathroom at home. But those in the hangars on the line just never are clean enough. Transient pilots complain. Local people who own airplanes give me fits.

I've walked into one of the hangar toilets a half hour after the operator claimed it was thoroughly cleaned and it still looked lousy.

Is there a remedy and what is it?

ANSWER: We'll bet a nickel cigar (if we can find one) that your terminal toilets have been painted in the last year. They probably have modern fixtures and good floors.

Your hangar toilets are probably without the advantages of plaster and tile walls, smooth terrazo or painted floors and concealed plumbing. The paint on the walls may be prewar, if any. Then those toilets have another drawback. They are used both by outsiders and insiders, and the insiders are the mechanics, the gas attendants and the hangar men whose hands can get mighty dirty in one hour.

Your customers in the terminal and in the hangars are about the same class of business and professional people and expect the same class of accommodations in both places. Not all hangar toilets are second rate. Many are on a par with your terminal facilities.

Unless the quality of the hangar

toilet installation for public use is of the same standard as the terminal, the operator has a hopeless task. Exposed plumbing always seems to complicate cleaning. If he does not have a separate washroom for his employes, he can't expect to keep the public one as clean. So it looks to us like your first problem is to put better separate public facilities in the hangars, get the operator to keep them clean, supply paper towels and receptacles and then paint them as frequently as you paint the terminal toilets.

Timely Observation

Thought you readers might be interested in something your Question and Answer Man once encountered when he was wandering around Lou Inwood's Kansas City Airport. There was a small addition to a building, with glass sides and top, which looked like a florist's hot house. He stuck his nose into the door, on a cold day in December, and there was pot after pot of flowers and foliage just starting. He inquired of John Edgerton what it was and found that those flowers and plants would next spring be in place in the flower beds decorating the administration building and its roadways. Perhaps a lot of other people do that but it was the first time your Question and Answer Man had seen it and he wondered why he had not seen it on more airports. ★ ★ ★

Los Angeles Selects Director of Airports

Robert A. McMillan, 52, has been appointed general manager of the Los Angeles Department of Airports following two months of study by the city's airport board, which had considered over 200 applications from all parts of the country. The job pays $15,000 a year in salary. Admiral John W. Reeves, Jr., USN-Ret., resigned from the position to return to private life.

McMillan was assistant city attorney and had been assigned to the airport department for a year and a half. Previously, he had worked in 1939-41 on drafting master leases with the airlines in establishing Los Angeles International Airport.

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(Continued from page 13)

and earnings record.

The Curtiss-Wright document points out with factual references that the basic intent and philosophy of the Congress and top government planners revolves around a mandatory recognition of a contractor's efficiency. Despite these clear-cut intentions, the tendency for the contract negotiations, particularly in the U. S. Air Force, is to reduce the level of profit margins for all aircraft builders without regard to the elements which cause variations in the costs of production for the individual companies.

It seems to us that congressional bird-dog committees might well give some consideration to these basic causes of trouble instead of junketing around the country trying to make the headlines for political purposes by dealing with comparatively insignificant defects.

Nobody wants a bird dog that chases rabbits. Senator Lyndon Johnson and his preparedness committee appear to be straining at gnats while swallowing camels.

TIMELY ACTION

THREE current worries among itinerant pilots include the too-rapid abandonment of low frequency radio ranges, the construction of high television towers and the growing problem of airline aircraft making straight-in approaches at uncontrolled airports.

A sensible pattern of low frequency radio ranges can be saved through political pressure only. There's not much sentiment in the CAA or in Congress to maintain a dual system but if aircraft owners and trade associations will put enough heat on, maintenance of low frequency range stations at reasonable intervals throughout the nation can be attained.

The other two problems are being worked on. The Federal Communications Commission, the CAA and radio, TV and aviation industry groups

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LATEST EXAMPLE OF AIRPLANE UTILIZATION BY BUSINESS FIRMS is furnished by Bell & Howell Company of Chicago, which has a Piper Pacer in which its sales training team can shorten travel time and cover a heavier schedule of nationwide meetings.

have been studying a method of achieving uniform treatment by the regional air space subcommittees of applications for radio and TV antenna towers over 500 feet in height located off of, but adjacent to presently existing airways. The group found that no more than 5 per cent of the TV towers to be constructed will exceed 1,000 feet. Out of 490 pending applications only 25 are for towers higher than 1,000 feet. One hope of the aviation industry is that the high towers can be located in the center of cities atop tall buildings. There is some consolation in these figures and in the fact that industry and government are at work on the problem.

Likewise, there is some satisfaction in the knowledge that the CAA is working on the undesirable situation at uncontrolled airports. One project looks for the establishing of uniform traffic rules and publishing them in the Civil Air Regulations. The proposal will require left-hand traffic flow unless otherwise marked on the ground, and landing and take-offs will be made parallel to the landing and take-off indicator and all approaches to a landing will be started from a base leg not less than 1,000 feet from the edge of the airport. Fixed-base operators are encouraged to display the local airlines schedules in a prominent place. One operator paints the schedules on each of his training aircraft. By continued cooperation between industry and government, freedom of the air can be maintained at least in the continental limits of our own country.

★ ★ ★

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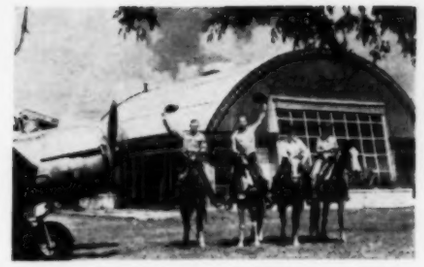

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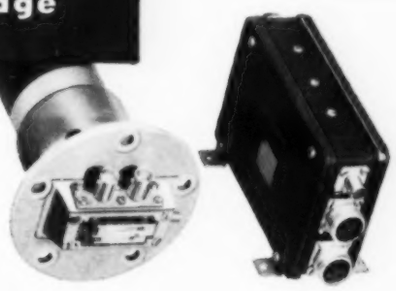

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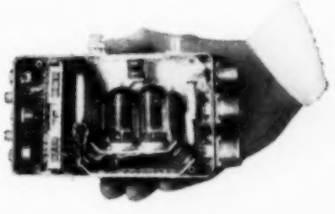

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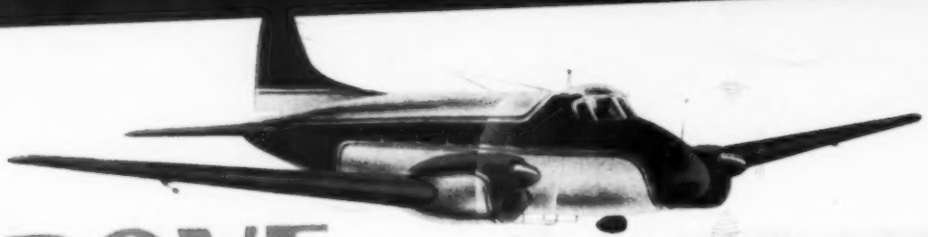

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